On Stone by Wm E. Hitchcock

The Black Brant.

Bernicla nigricans *(Lawrence)*

Geo. G. White del. Lith. Printed & Col.d by J. T. Bowen, Phil.

Reproduced with permission from Cassin's Illustrations.

508.73
S942

THE

NATURAL HISTORY

OF

Washington Territory and Oregon,

WITH MUCH RELATING TO

MINNESOTA, NEBRASKA, KANSAS, UTAH, AND CALIFORNIA,

BETWEEN THE THIRTY-SIXTH AND FORTY-NINTH PARALLELS OF LATITUDE,

BEING THOSE PARTS OF THE FINAL REPORTS

ON THE SURVEY OF THE NORTHERN PACIFIC RAILROAD ROUTE,

RELATING TO THE NATURAL HISTORY OF THE REGIONS EXPLORED, WITH FULL CATALOGUES AND DESCRIPTIONS

OF THE PLANTS AND ANIMALS COLLECTED FROM 1853 TO 1860.

LIBRARY U.S. NATIONAL MUSEUM
143591
MAY 18 42
SMITHSONIAN INSTITUTION

BY

GEO. SUCKLEY, M.D., AND J. G. COOPER, M.D.,
NATURALISTS TO THE LATE N. P. RAILROAD EXPLORATION.

WITH THE CO-OPERATION OF

MESSRS. BAIRD, GIRARD, STIMPSON, GEO. GIBBS, KENNICOTT, TORREY, GRAY, CASSIN, AND LAWRENCE.

INSECTS BY DR. JOHN L. LECONTE. MOLLUSCA BY WM. COOPER, ESQ.

THIS EDITION CONTAINS A NEW PREFACE, GIVING A SKETCH OF THE EXPLORATIONS, A CLASSIFIED TABLE OF CONTENTS, AND THE LATEST ADDITIONS AND CORRECTIONS BY THE AUTHORS.

With Fifty-eight Plates.

Deposit of S. F. BAIRD.

New York:
BAILLIÈRE BROTHERS, 440 BROADWAY.
LONDON:—H. BAILLIÈRE, 219 REGENT STREET.
PARIS:—J. B. BAILLIÈRE ET FILS, RUE HAUTEFEUILLE.
MADRID:—C. BAILLY-BAILLIÈRE, CALLE DEL PRINCIPE.
1860.

QH
104
S94
1860
SCDNRB

EXPLANATORY NOTICE.

For convenience in binding the parts separately, if desired, the Botanical and Zoological portions are paged independently. The plates are numbered to correspond with the Government series without reference to the order in which they are placed herein.

For explanations of most of the illustrations see page viii. immediately preceding the Entomological chapter; but the following have been added which are not contained in the Government Edition:

BIRDS, Pl. VII.—*Strepsilas melanocephalus*, reproduced from Vol. X. P. R. R. Reports.

" Pl. VIII.—*Podiceps Californicus*, " " " "

" *Bernicla nigricans*, LAWR. Reproduced by permission from Cassin's "Illustrations of the Birds of California," &c.

" *Larus Heermanni*, CASSIN. " " " " " "

REPTILES, Pl. XXIII.—*Masticophis taeniatus*, reproduced from Vol. X, P. R. R. R.

" Pl. XXIX.—*Rana halecina*, &c. For the first time published. This plate by error is alluded to on p. viii. (Zoological portion), as plate XXIII.

FISHES, Pl. XLIII.—Var. of *Pimelodus ailurus*, not before published.

" Pl. XXIX.—*Gobio gelidus*, reproduced from U. S. and Mex. Boundary Survey.

The corrections needed in the Government Edition are obvious. The additional material here given has been gathered *since* the original report was presented to Congress.

The first hundred copies of the present book were bound to include a chapter of 26 pages on Meteorology and published with the names of Cooper and Suckley on the title-pages. The present issue is identical with that, excepting, however, in the improvements here alluded to, and that it does not contain the Meteorological Chapter—which is counter-balanced to a great extent by the insertion of Mr. Cassin's valuable plates above mentioned. The plates of Scenery and Chart accompanying the meteorological chapter are also omitted.

The plates spoken of as having been reproduced from other works, or volumes, have been incorporated with the view of making the book more useful to students of Natural History who may be on the remote frontier without library facilities.

The plates of the Quadrupeds, Reptiles, and Fishes in this edition, have been for the most part struck off from the *original copper plates*, and are accordingly much superior to those of the Government Edition.

CONTENTS.

PREFACE,

INCLUDING A BRIEF NARRATIVE OF EXPLORATIONS FROM 1853 TO 1857.

ERRATA,

WITH ADDITIONS AND CORRECTIONS UP TO 1860.

PART I.—METEOROLOGY.

With an Isothermal Chart and Plates of Scenery.

Comparison of Nebraska with regions having a similar climate in Europe—2. Climate of Washington Territory—9. General Conclusions (inserted here by mistake, instead of at the end of the Chapter)—14. Cold as an obstruction to the Railroad route—15. Snow as an obstruction to the Railroad line—19. Table of mean temperatures at stations between the mouth of the St. Lawrence and Puget Sound—26.

PART II.—BOTANICAL REPORT.

With ten Plates—List of Illustrations.....7.

No. 1.—Report on the Botany of the Route—[including the Physical Geography and the distribution of plants and animals in Washington Territory]—9. The Cascade Mountains—9. Great Plain of the Columbia—12. Region west of the Cascade Mountains—14. Prairies of the western region—15. Forests of the western region—Coniferous trees—20. Broad-leaved trees—23. Shrubby undergrowth—26. Climate of the western region—28. Fresh waters of the Territory—30. Salt waters of the Territory—32. Scenery of the western region—34.

No. 2.—Catalogue of Plants collected East of the Rocky Mountains—36. Echinospermum Fremontii—42. Endolepis Suckleyi—43. Obione Suckleyana—43. [N. B.—Only new species are named in these tables.]

No. 3.—Catalogue of Plants collected in Washington Territory—46. Plants collected from the summit of the Cascade Mountains, eastward to the upper Columbia River, and northward to the 49th degree of latitude, between July and September, 1854—47. Astragalus serotinus—47. Malacothrix crepoides—49. Plants collected west of the Cascade Mountains during 1854-'55—51. Sisymbrium deflexum—52 [described in Whipple's P. R. R. Rep., vol. IV., p. 66.] Lathyrus villosus—54. Cymopterus littoralis—59.

Index to Botanical Report—69.

PART III.—ZOOLOGICAL REPORT.

List of Illustrations.....vii.

No. 1.—REPORT UPON THE COLEOPTEROUS INSECTS COLLECTED ON THE SURVEY.

With two Plates, illustrating thirty-five Species.

Introductory Remarks—1. Table of Genera common to the Eastern and Western Continents—5. Genera peculiar to America—5. Species common to the Atlantic and Pacific slopes of the Continent—6. Catalogue of species found in Pacific America, north of San Francisco, in systematic order—7. Descriptions of species, viz.:

CICINDELIDÆ, (3 sp.)..... 27
CARABIDÆ, (15 sp.)..... 27
AMPHIZOIDÆ, (1 sp.)..... 32
DYTISCIDÆ, (3 sp.)..... 34
SILPHIDÆ, (3 sp.)..... 35
STAPHYLINIDÆ, (1 sp.)..... 35
HISTERIDÆ, (3 sp.)..... 35
NITIDULIDÆ, (3 sp.)..... 36
COLYDII, (1 sp.)..... 39
CRYPTOPHAGIDÆ, (1 sp.)..... 39
BYRRHIDÆ, (3 sp.)..... 37
SCARABEIDÆ, (18 sp.)..... 37
BUPRESTIDÆ, (12 sp.)..... 42
ELATERIDÆ, (9 sp.)..... 45
LAMPYRIDÆ, (1 sp.)..... 48
TELEPHORIDÆ, (1 sp.)..... 48
CLERIDÆ, (1 sp.)..... 48
PTINIORES, (3 sp.)..... 48
TENEBRIONIDÆ, (15 sp.)..... 49
MELOIDÆ, (2 sp.)..... 51
ŒDEMERIDÆ, (2 sp.)..... 52
CURCULIONIDÆ, (34 sp.)..... 52
CERAMBYCIDÆ, (28 sp.)..... 59
CHRYSOMELINÆ, (27 sp.)..... 66
COCCINELLIDÆ, (4 sp.)..... 70
REFERENCES TO THE PLATES,..... 72

APPENDIX.

No. 2.—REPORT UPON THE MAMMALS COLLECTED ON THE SURVEY.

With Six Plates.

CHAPTER I.—Report by Dr. J. G. Cooper—73. CHAPTER II.—Report by Dr. G. Suckley, U. S. A.—89. CHAPTER III.—Report by Dr. Suckley and G. Gibbs, Esq.—107. Descriptions of species included in them, viz.:

[N. B.—New species only are here named.]
SORICIDÆ, Shrews, (4 sp.).....73, 89
Neosorex navigator,..... 73
Sorex vagrans,..... 73
Sorex trowbridgii,..... 89
Sorex suckleyi,..... 89
TALPIDÆ, Moles, (3 sp.).....73, 89, 107
Urotrichus gibbsii,..... 89
FELIDÆ, Cats, etc. (3 sp.).....74, 89, 108
Lynx fasciatus,.....74, 90, 109
CANIDÆ, Wolves, etc. (8 sp.).....75, 90, 110
VIVERRIDÆ, Civets,..... 114
MUSTELIDÆ, Weasels, etc., (12 sp.).....76, 92, 114
Mephitis occidentalis,.....76, 94, 116
URSIDÆ, Bears, etc. (3 sp.).....78, 94, 118
PHOCIDÆ, Seals, (1 sp.)..... 78
SCIURIDÆ, Squirrels, etc. (14 sp.).....79, 95, 121
MURIDÆ, Mice, etc. (13 sp.).....83, 101, 127
Hesperomys gambelii,.....83, 102, 127
" boylii,..... 84
" austerus,.....83, 102, 127
Neotoma fuscipes,..... 84
" occidentalis,.....85, 102, 128
SACCOMYIDÆ, Pouched Rats, etc. (5 sp.).....100, 126
Perognathus monticola,..... 101
LEPORIDÆ, Hares, etc. (6 sp.).....87, 103, 130
Lepus washingtonii,.....87, 103, 130
CERVIDÆ, Deer, etc. (7 sp.).....88, 105, 133
CAVICORNIA, Goats, Antelopes, etc. (3 sp.)..106, 136
SOLIDUNGULA, Horses,..... 138

No. 3.—REPORT UPON THE BIRDS COLLECTED ON THE SURVEY.

With Eight Plates.

CHAPTER I.—LAND BIRDS.

VULTURIDÆ, Vultures, (3 sp.) 140
FALCONIDÆ, Falcons, (17 sp.) 142
Buteo cooperi 148
STRIGIDÆ, Owls, (9 sp.) 154
PICIDÆ, Woodpeckers, (7 sp.) 159
TROCHILIDÆ, Humming Birds, (1 sp.) 164
CYPSELIDÆ, Swifts, (1 sp.) 165
CAPRIMULGIDÆ, Goatsuckers, (2 sp.) 166
ALCEDINIDÆ, Kingfishers, (1 sp.) 167
COLOPTERIDÆ, Flycatchers, (5 sp.) 167
TURDIDÆ, Thrushes, (7 sp.) 171
SYLVICOLIDÆ, Warblers, (12 sp.) 176
HIRUNDINIDÆ, Swallows, (6 sp.) 184
BOMBYCILLIDÆ, Waxwings, (2 sp.) 187
LANIIDÆ, Shrikes, (3 sp.) 188
LIOTRICHIDÆ, Wrens, etc. (4 sp.) 189
CERTHIADÆ, Creepers, (4 sp.) 192
Sitta aculeata, ... 193
PARIDÆ, Titmice, (4 sp.) 194
Parus occidentalis, ... 194
ALAUDIDÆ, Larks, (1 sp.) 195
FRINGILLIDÆ, Finches, (20 sp.) 196
Carpodacus californicus, ... 196
Passerculus alaudinus, ... 199
ICTERIDÆ, Trupials, (4 sp.) 207
CORVIDÆ, Crows, (7 sp.) 210
Corvus caurinus, ... 211
COLUMBIDÆ, Pigeons, (3 sp.) 217
TETRAONIDÆ, Grouse, (5 sp.) 219
PERDICIDÆ, Partridges, (2 sp.) 225

CHAPTER II.—WATER BIRDS.

GRUIDÆ, Cranes, (1 sp.) 227
ARDEIDÆ, Herons, (3 sp.) 228
CHARADRIDÆ, Plovers, (5 sp.) 229
HÆMATOPODIDÆ, Oystercatchers, (3 sp.) 233
RECURVIROSTRIDÆ, Avosets, (1 sp.) 234
PHALAROPODIDÆ, Phalaropes, (2 sp.) 236
SCOLOPACIDÆ, Snipes, (14 sp.) 237
RALLIDÆ, Rails, (3 sp.) 246
ANATIDÆ, Swans, etc. (28 sp.) 248
Bernicla nigricans, ... 252
PELECANIDÆ, Pelicans, (2 sp.) 265
PHALACROCORACIDÆ, Cormorants, (2 sp.) 267
PROCELLARIDÆ, Albatrosses, (1 sp.) 269
LARIDÆ, Gulls, (8 sp.) 270
Larus suckleyi, ... 274
Rissa septentrionalis, ... 277
COLYMBIDÆ, Divers, (8 sp.) 278
Colymbus pacificus, ... 279
Podiceps cooperi, ... 280
" occidentalis, ... 281
ALCIDÆ, Auks, etc. (6 sp.) 283
Cerorhina suckleyi, ... 284
List of Birds attributed to the Northwest, of which no specimens were found by the Expedition, ... 288

No. 4.—REPORT UPON THE REPTILES COLLECTED ON THE SURVEY.

With Eleven Plates.

[N. B.—New reptiles only are named here.]
CHELONIA, Turtles, (1 sp.) 292
SAURIA, Lizards, (6 sp.) 292
OPHIDIA, Serpents, (21 sp.) 295
Eutainia atrata 296
Eutainia cooperi 296
" haydenii 298
Regina kirtlandii 299
BATRACHIA, skinny reptiles, (7 sp.) 303
Siredon lichenoides var melanosticta 306

No. 5.—REPORT UPON THE FISHES COLLECTED ON THE SURVEY.

With Twenty Plates.

CHAPTER I.—REPORT UPON THE SALMONIDÆ.

General remarks—308. Table of seventeen species, their names and periods of arrival in the rivers—316.
[N. B.—New fish only are named here.]
Salmo argyreus 326
" truncatus 327
" gibbsii 332
" confluentus 334
" proteus 339
Salmo canis 341
" spectabilis 342
" aurora 343
" masoni 345
" stellatus 346
" lewisii 348

CHAPTER II.—REPORT UPON THE FISHES, EXCLUSIVE OF THE SALMONIDÆ.

PERCIDÆ, Perch, etc., (3 sp.) 350
HETEROLEPIDÆ 351
Chiropsis nebulosus 351
COTTIDÆ, Sculpins (7 sp.) (Cottopsis) 351
Oligocottus maculosus 352
Leptocottus armatus 352
Aspicottus bison 353
Artedius notospilotus 353
Zaniolepis latipinnis 353
Nautichthys oculo-fasciatus 354
SCORPŒNIDÆ, (1 sp.) 354
Sebastes melanops 354
GASTEROSTEIDÆ, Sticklebacks, (2 sp.) 354
Gasterosteus pugetti 354
SCIÆNIDÆ, (1 sp.) (Amblodon) 355
BLENNIDÆ, (2 sp.) 355
Gunnellus ornatus 355
Cebidichthys violaceus 355
BATRACHIDÆ, (2 sp.) (Lumpenus) 356
Porichthys notatus 356
GADIDÆ, Cods 356
Morrhua 356
PLEURONECTIDÆ, Flatfish, (1 sp.) 357
Platichthys rugosus 357
EMBIOTOCOIDÆ, (3 sp.) 357
Embiotoca perspicabilis 357
Damalichthys vacca 358
SILURIDÆ, Catfish, (2 sp.) 359
Pimelodus ailurus 359
" olivaceus 359
CYPRINIDÆ, Suckers, (12 sp.) Mylocheilus 359
Carpiodes damalis 359
Acomus lactarius 360
Catostomus sucklii 360
Pimephales fasciatus 360
Hybognathus argyritis 361
Argyreus nubilus 361
Pogonichthys communis 361
Gobio gelidus 362
Richardsonius lateralis 362
Cheonda cooperi 362
CLUPEIDÆ, Herring, (3 sp.) 363
Meletta cœrulea 363
Engraulis mordax 365
SYNGNATHIDÆ, Pipefish, (1 sp.) 365
Syngnathus arundinaceus 365
AMIADÆ, Mudfish, (2 sp.) 365
STURIONIDÆ, Sturgeons, (1 sp.) 366
CHIMAERIDÆ, (1 sp.) 366
SPINACIDÆ, (1 sp.) 367
Acanthias suckleyi 367
RAJIDÆ, Skates, etc., (1 sp.) 367
Raja cooperi 367
PETROMYZONTIDÆ, Lampreys, (2 sp.) 368
Icthyomyzon castaneus 368
Ammocœtes cibarius 368

No. 6.—REPORT UPON THE MOLLUSCA COLLECTED ON THE SURVEY.

[N. B.—New species only are named in this table.]

MURICIDÆ, (6 sp.) 369
Chrysodomus middendorfii 370
BUCCINIDÆ, (10 sp.) 371
Nassa gibbsii 371
NATICIDÆ, (1 sp.) 373
CERITHIADÆ, (1 sp.) 373
MELANIADÆ, (5 sp.) 374
TURRITELLIDÆ, (1 sp.) 374
LITTORINIDÆ, (3 sp.) 374
TURBINIDÆ, (2 sp.) 375
HALIOTIDÆ, (5 sp.) 375
FISSURELLIDÆ, (2 sp.) 375
PATELLIDÆ, (7 sp.) 376
CHITONIDÆ, (4 sp.) 376
HELICIDÆ, (7 sp.) 376
LIMACEA, (1 sp.) 377
LYMNEADÆ, (10 sp.) 378
Physa bullata 378
Lymnea umbrosa 378
Ancylus caurinus 378
Planorbis planulatus 378
BULLIDÆ, (2 sp.) 379
OSTREIDÆ, (4 sp.) 379
MYTILIDÆ, (5 sp.) 380
ARCADÆ, (1 sp.) 381
UNIONIDÆ, (4 sp.) 381
CARDIADÆ, (2 sp.) 382
LUCINIDÆ, (1 sp.) 382
CYCLADIDÆ, (1 sp.) 382
VENERIDÆ, (3 sp.) 382
MACTRIDÆ, (1 sp.) 384
TELLINIDÆ, (4 sp.) 384
SOLENIDÆ, (2 sp.) 385
MYACIDÆ, (2 sp.) 385
ANATINIDÆ, (1 sp.) 386
PHOLADIDÆ, (1 sp.) 386

No. 7.—REPORT ON THE CRUSTACEA COLLECTED ON THE SURVEY.

DECAPODA BRACHYURA, (4 sp.) 387
" MACROURA, (6 sp.) 388
ISOPODA ,(5 sp.) 389
List of Crustacea obtained by Dr. Suckley 389
INDEX TO ZOOLOGICAL REPORT 391

PREFACE.

ORIGIN AND CHARACTER OF THE WORK.

This volume consists of those parts of the eleventh of the Pacific Railroad Reports, which describe the natural condition and products of the country traversed by the Surveying Expedition near the 47th and 49th parallels of latitude. It contains also, much respecting the adjacent regions, including Minnesota, Nebraska, Kansas, Oregon, California, and Washington Territory, with the British possessions to the North, all of which were visited by the naturalists of the expedition.

The Meteorological chart together with the first part (Chapter IV. of the Government edition), will serve in some degree to show the general features of these countries, together with their climate. Prefixed to the catalogues of plants, is a description of the physical outlines of the surface and geographical distribution of species in Washington Territory, with full accounts of the forests and trees.

Parts II. and III. contain descriptions of sixty-four species of Mammals, two hundred and fourteen Birds, thirty-four Reptiles, sixty-six Fishes, three Mollusca, seven Crustacea, one hundred and ninety Insects, and eleven Plants. Of these, one hundred and seventy descriptions have never before been published, and ninety others, were first described from specimens collected by this Expedition. Besides these, there are noticed more or less fully, about ninety species of Mollusca, and seven hundred and fifty Plants. The names of new species (excepting Insects), will be found in the table of contents, where are also inserted the names of families accidentally omitted in printing the work, with references to the first genus included in each.

The report on Insects is wholly the work of the distinguished entomologist Dr. J. L. Le Conte, of Philadelphia, who has added in an appendix the latest discoveries in that department.

In the other branches of Zoology, the exact technical descriptions are borrowed from those of Prof. Baird, Mr. Cassin, and Mr. Lawrence, in vols. VIII. and IX. Pacific Railroad Reports (Mammalia and Birds) and by Dr. Girard in vol. X. (Fishes). Those of Reptiles were chiefly taken from Dr. Girard's report on the collections of the Exploring Expedition, and the Smithsonian catalogue of serpents, while many are the original work of that zealous and accurate naturalist, Mr. Robert Kennicott. These have been copied *verbatim* in many cases, while in others slight corrections and additions have been made, authorized by the observations of the naturalists in the field. Thus many original measurements are added, and with the fish and reptiles, the colors, *while living*, substituted for those of dead specimens faded by alcohol. Other alterations are noticed in the appropriate places. The descriptions of Crustacea are condensed from Mr. Wm. Stimpson's monograph in the Journal of the Boston Society of Natural History, vol. VI. The new plants are described by Profs. Torrey and Gray, and the Mollusca, by Mr. Wm. Cooper.

In the work of preparing the reports, the invaluable facilities afforded by the vast Government collection, and the fine library of the Smithsonian Institution, have been freely granted by its learned Secretary, Prof. Henry. There, also, are deposited the specimens upon which the descriptions here given were based.

As an apology for the too numerous typographical and other errors, the authors can only say that about half of the work was hurried rapidly through the press without their supervision, and the rest printed in four days. Still, they feel satisfied that there are fewer errors than usual in similar Government publications, owing chiefly to the kindness of Prof. Baird in correcting the first part of the proofs in the midst of a vast amount of other more urgent business. To him, also, they are indebted for obtaining the excellent copper-plate illustrations of the Natural History, so far superior to the lithographic transfers of the Government copies, and for arranging much of the manuscript for press.

The plates of scenery are selected as illustrating the various features of the route, and like the main part of the work, refer more especially to Washington Territory, as the most interesting portion of it. Lake Jessie in Minnesota, and the great Missouri Falls in Nebraska, are characteristic of the eastern portion. Two represent the most desolate parts of the upper Columbia cañons, and four others, the magnificent scenes near the Pacific coast. None of the plates in this volume have been before published in any of the series.

EXPLORATIONS IN 1853-4 CONNECTED WITH THE P. R. R. EXPEDITION.

The following brief sketch of the journeys made by the naturalists of the expedition in collecting these materials, seems necessary to accompany the volume.

Under the acts of Congress approved March 3, 1853, authorizing the Secretary of War to organize parties "to ascertain the most practicable and economical route for a railroad from the Mississippi river to the Pacific Ocean;" that from St. Paul's, Minnesota, to Puget's Sound, was placed in charge of Isaac I. Stevens, just appointed Governor of Washington Territory, and late Major, United States Engineers. The line of exploration was divided into two parts, so that separate parties working simultaneously at both ends of the route, much more might be effected in a shorter period.

The eastern division, under the personal direction of Gov. Stevens, was the one to which Dr. Suckley was attached as surgeon and naturalist. He reached the camp of the division near Fort Snelling, Minnesota, on May 24, after picking up some interesting and even new species of animals along the upper Mississippi, above St. Louis.

Proceeding northward, June 6, the party left the Mississippi at Sauk rapids, and turned towards the west on the 10th. Traveling at the rate of eighteen and a third miles a day, they reached Fort Union, Nebraska, August 1, seven hundred and fifteen and a half miles, by the route traveled. Two-thirds of this was through the level, marshy, and lake-dotted plains of Minnesota, with a luxuriant prairie vegetation, and abounding in game and fish. The remainder, passing over the Coteau des Prairies to the Missouri, was characterized by saline and stagnant lakes, less abundant vegetation, and fewer species of animals. Dr. Suckley made an excursion off the route of the main party up to the head Mouse river, north of latitude 49°, returning to Fort Union by way of White-earth river. Unfortunately, a considerable part of the collections from this part of the route, were lost on the way to Washington, chiefly those preserved in alcohol.

At the same time, Lieutenants Donelson and Mullan were traveling by steamboat up the Missouri, having left St. Louis May 24, and reached Fort Union, July 3, collecting numerous specimens on the way, of which those in alcohol were also lost.

Proceeding westward, August 9, they traveled to Fort Benton 377½ miles, at about fourteen miles a day, reaching there September 8. Few specimens were to be obtained in this part, though the rivers continued to furnish many new fish. Vegetation was scanty compared to the eastern part. Wagons

were used up to this point, and a very thorough collection of the Natural History products was made, and sent back by Lieut. Saxton, who, coming eastward from the Pacific coast, met them there and descended the river in a boat to Fort Leavenworth.

Dr. Evans, geologist to the eastern division, who had crossed Nebraska in a northwest direction from Fort Pierre, also met them there and contributed some specimens to the collections.

Leaving Fort Benton September 22, Dr. Suckley traveled with the main party by way of Hell Gate Pass to St. Mary's in Bitter-root Valley, where he arrived on the 29th, making the distance of two hundred and thirty-five miles in that time. This rapid riding over a more difficult country than before, and without wagons for transportation, prevented large collections being made in the most interesting portion of the route, yet the few specimens preserved proved especially valuable. The country is about half wooded, and rich in vegetable and animal life, particularly west of the Rocky Mountains. The deficiencies of this part of the route were afterwards supplied in a great measure by the collections made by Lieut. Mullan in Bitter-root Valley during the following year, and sent to Dr. Suckley.

At this point Dr. Suckley received orders to make an exploration by water down Clark's Fork and the Columbia. He left St. Mary's, October 15, in a skin boat made of three bullock's hides, in company with two white men and an Indian. They traveled in this way for twenty-five days, reaching Lake Pend'Oreilles, where they left the boat and crossed by land the distance of sixty miles to Fort Colville, arriving there November 13. The difficulties and exposures of this trip so late in the season, prevented the collection of many specimens, but the numerous and important observations made, are found in his report, published in vol. I. Pacific Railroad Reports, p. 291, 1854. Obtaining wooden canoes at Fort Colville, Dr. Suckley continued down the river and arrived at Fort Vancouver, December 6, nineteen days later. A few days after he proceeded to Puget's Sound, and receiving an appointment as Assistant Surgeon United States Army, was stationed at Fort Steilacoom through the winter, making one voyage down the Sound the following March, as far as the Straits of Fuca. Here ended his official connection with the railroad exploration.

The western division of the expedition under the command of Brevet Captain George B. McClellan, U. S. Engineer, went from New York by the Panama route to Fort Vancouver, W. T., where Dr. Cooper, the surgeon and naturalist arrived June 14, two weeks in advance of his collecting equipment. During the four weeks ensuing, while the party was being organized, and the supply train of Lieut. Saxton fitted out for his journey to meet the eastern division in the Rocky Mountains, little could be collected. On July 18 the party left Fort Vancouver, badly provided with the means of transportation, which was confined to pack-horses and mules of inferior quality and very heavily laden. For this reason the collections were limited to the most interesting objects until the party reached the summit of the Klickatat Pass on Aug. 6, having made only $93\frac{3}{4}$ miles, at a rate of $6\frac{7}{10}$ miles a day.

Two days were spent in the mountain pass, but too far from the Alpine peaks to reach any of their peculiar products. Descending the eastern slopes, Aug. 10, the route turned northward, and on the 20th a stationary camp was pitched near the "Wenass," a branch of the Yakima River. Here an attempt was made to obtain fresher and better animals from Fort Steilacoom, and many of those broken down were taken there by Lieut. Hodges; but finding none in exchange, the only resource was to send back the military escort and others, by which means the party was reduced nearly one-half. Dr. Cooper was obliged to save his horse by exploring the neighborhood on foot only.

Sept. 3, the stationary camp was removed $14\frac{3}{4}$ miles, to the valley of the main Yakima, where it remained two weeks longer—detached parties exploring, during that time, the whole course of that river. A few specimens were brought in by Mr. Gibbs, and Dr. Cooper collected a considerable number near

the camp, but most of the woodless region east of the mountains was at that season almost destitute of animals or plants, on account of its excessive heat and dryness.

Sept. 19, the party proceeded northward, and, slowly moving along the rugged banks of the Columbia, reached Fort Okanagan on the 27th. The average day's journeys east of the mountains were only $11\frac{6}{10}$ miles, increasing as the loads lightened. From there the whole division made a detour to explore the "Methow" Valley, traversing a distance of about 80 miles in six days, and returning again on finding no practicable pass westward. Then, resuming the northward course, they traveled up the valley of the Okanagan to a lake beyond the 49th parallel, and, turning southeast, reached Fort Colville Oct. 18.

Here, meeting Gov. Stevens, and soon afterward the whole eastern division, they journeyed southward at 14 miles a day, over the nearly level plains of the Columbia, and in four weeks reached Fort Dalles, arriving there Nov. 15. The numerous species of fish and reptiles collected, most of which were probably new, were nearly all lost by the bursting of the alcohol cans.

Arriving at Fort Vancouver soon after, Dr. Cooper remained there three months, collecting the birds fish, etc., to be found there in winter. Feb. 20, 1854, he went down the Columbia and made collections near its mouth, and at Shoalwater Bay, a few miles north of it.

COLLECTIONS MADE IN 1854–5–6–7, CHIEFLY BY PRIVATE ENTERPRISE.

After the disbanding of the expedition, April 1, Dr. Cooper remained at the same place until July 18, collecting all that his private means would allow. He then crossed the unexplored Coast Range, on foot, with a party of citizens, and traveled to Puget Sound, where he remained a month, collecting specimens about Fort Steilacoom, in company with Dr. Suckley, returning to Shoalwater Bay in September by way of the Cowlitz and Columbia Rivers.

Dr. Suckley at the same time proceeded under orders to Fort Dalles, O. T. On arriving there he joined an expedition against the Snake Indians, and journeyed by the usual emigrant route through Oregon as far east as the Boiseè River, collecting many specimens and much information on the way, returning to Fort Dalles in the end of November, where he remained during the following winter.

Late in February, 1855, Dr. Cooper went up the coast to Gray's Harbor, and joining the Indian treaty commission under Gov. Stevens, on the Chehalis, ascended that river and proceeded again to Puget Sound, intending to accompany the Governor in May to the Blackfoot council at Fort Benton, and thence to return to the Atlantic coast by way of the Missouri River. Meantime he made a voyage down the sounds to the Straits of Fuca, spent a month collecting on Whitby's Island and another near Steilacoom. Unexpected disappointments and losses prevented the journey eastward which he had proposed, and he found it necessary to return to Shoalwater Bay in July. There he remained until October 4, when, by the kind invitation of Capt. Alden, he sailed in the Coast-survey Steamer Active to San Francisco.

During a visit of six weeks' duration in Santa Clara Valley he was so fortunate as to obtain many new and interesting animals, some of which are described in this volume.

In the meantime Dr. Suckley, obtaining leave of absence for six months, left the Territory in July and went by sea to New York. In December he returned by the same route, and at Panama met Dr. Cooper, who had been for a week collecting specimens, particularly marine shells. Another week was spent by them in exploring that rich locality before they set out for their far-distant destinations on the opposite sides of the continent.

Dr. Suckley reached Fort Steilacoom near the end of January, 1856, and remained in active service among the Cascade Mountains of Washington Territory for a year, collecting numerous specimens in all departments of nature. Unfortunately, several of the most valuable boxes of specimens sent by him from the Territory never reached Washington.

Resigning his commission in February, 1857, he sailed for China, *via* San Francisco, collecting several additional sea-birds, here described, on the way. He thus spent three years and one month in the field of exploration, of which four months only were occupied east of the Rocky Mountains. During the present year he has crossed the continent again by land, *via* Salt Lake, to San Francisco.

Dr. Cooper spent two years and three months in Washington Territory and six weeks in California. In 1857 he accompanied an expedition through Kansas and Nebraska, as far as Fort Laramie, and has combined in this report many observations collected between June and November in those territories.

Many valuable specimens from Cape Flattery have been furnished by Lieut. Trowbridge, U. S. A., and from Astoria, O. T., by his assistant Mr. Wayne.

The interesting notes and specimens contributed by Mr. George Gibbs, the able geologist of the western division, were collected during several years' journeys and residence at various points. In 1849 he crossed the continent by the usual emigrant route along the Platte and Snake Rivers. Going to California, he spent two years among the mountains in the north of that state and in southern Oregon, near the Klamath. In 1853, after some months' residence at Astoria, O. T., he joined the party under Capt. McClellan, and after its return to the west coast made important explorations in company with Gov. Stevens around Puget Sound, the Straits of Fuca, Cape Flattery, and the Chehalis River. He still continues his investigations and collections as geologist of the N. W. Boundary Survey, together with Dr. C. B. R. Kennerly, whose recent discoveries in the Natural History of those remote regions, have been of great assistance in the determination of many facts here recorded.

The very extensive and valuable collections made by Dr. F. V. Hayden, Naturalist to the Expeditions for the Survey of Nebraska ever since the year 1854, have been also liberally used, and some new species collected by him are here described.

Besides the gentlemen above mentioned as assisting in the collection of materials, the authors are indebted to numerous members of the Expedition, and to many citizens of the territories explored, for assistance in collecting specimens and observations. The names of such would form too long a catalogue for insertion here, but are mentioned in the notes connected with their contributions.

It has been the object of the authors to present such a report as would be both interesting and instructive to the public at large, divested of all such technicalities and discussions as, though eminently important and necessary for the establishment of natural science on a true basis, are yet dry to the general reader, and unimportant to their present purpose. At the same time they believe that through the completeness in this respect of the general reports referred to, but few technical errors will be found to have crept in. The references to American authors on the subjects mentioned are very complete, and the reader will thus find means of further information on the more abstruse points referred to.

They have paid attention particularly to the perfection of those portions relating to Washington Territory, both because more novelty and interest is connected with the productions of that country, and because their residence there of several years each enabled them to collect much more than they could on other parts of the route. Still, most of the specimens collected in other territories are mentioned, especially such as are of new species.

Though the natural products already known or believed to occur in the territories mentioned, are

more numerous than might appear from these reports, the authors have closely confined themselves to such as they actually met with. It is hoped that the work will thus be rendered truly original and reliable, instead of being merely a compilation of the errors, as well as the facts, of preceding authors.

Instead of Plates of Birds, Nos. XXI. and XXIV. (which are merely a comparison of the heads, feet, and tails of the common American crow and raven), Plates VII. and VIII. of Birds have been prepared for this Volume, as more generally interesting. (See list of Plates.)

The liberality of the publishers in authorizing the additions made to the present edition, has enabled the authors to make important corrections, and thus, in some degree, to keep pace with the advance of science. The small number of copies published by Government (1,500) encourages them to believe that this improved edition will be salable in number sufficient to pay the expenses of its publication.

N.B.—Since printing the preceding pages, it has been ascertained that the Government edition of the volumes containing these reports is not called the *eleventh*, but "Supplement to Vol. I."

New York, November, 1859.

ERRATA.

PART I.—CHAPTER IV.—METEOROLOGY.

NOTE.—The first fourteen pages were intended to have come after the others, but were transposed in the arrangement of the manuscript for the press. This will explain the omission of certain figures, and the reference to "*preceding*" pages, which must be understood to mean *following*. The "GENERAL CONCLUSIONS" on page 14 particularly should be read after the rest of the chapter. Temperatures are in degrees of Fahrenheit, and the measurements of rain in inches; fractions are usually decimal. In some instances the temperature given for winter, &c., differs from that of the U. S. A. Met. Reg., because the mean of the three winter months is here estimated for instead of January, February, and March, as in that work.

Page 2, line 12 from top, for "46°" read "40°."

Page 2, line 10 from bottom, after "850" read "*feet.*"

Page 2, line 4 from bottom, for "2,790" read "2,730."

Page 3, line 16 from top, for "3.25" read "3° 35."

Page 3, line 18 from top, for situation of Fort Pierre see page 23, line 9.

Page 3, line 24 from top, for the blank read "*about* 94° 47′."

Page 3, line 35 from top, and elsewhere throughout the volume, for "*Taurido*" read "*Tauride.*"

Page 3, line 38 from top, after "*sea*" read "*to.*"

Page 4, line 6 from top, for "*Tagaurog*" read "*Taganrog.*"

Page 4, line 11 from top, for "*Kasaw*" read "*Kasan.*"

Page 4, line 36 from top, for "*Wosonige*" read "*Woroneje.*"

Page 4, line 36 from top, for "*Tanubow*" read "*Tambow.*"

Page 4, line 40 from top, for "*Kanhaw*" read "*Kouban.*"

Page 5, line 10 from top, the original numbers are "11.6, 5.9, 4.2, 2.8, 1.7, 1.7, 0.8, 0.8."

Page 5, line 11 from top, for "$\frac{8}{100}$" read "$\frac{8}{1000}$."

Page 5, line 15 from bottom, for "*amonsgt*" read "*amongst.*"

Page 6, line 5 from bottom, for "*Kusok*" read "*Koursk.*"

Page 8, line 2 from top, for "*Khessonalow*" read "*Kherson alone.*"

Page 9, line 4 from top, for "*Ashlewood*" read "*Ashleaved.*"

Page 10, line 13 from top, and elsewhere throughout the volume, for "*Laperai*" read "*Lapwai.*"

Page 10, line 16 from top, for "600" read "1,396."

Page 10, line 17 from top, for "55° 15" read "53° 15."

Page 11, line 15 from top, for "1° 20′ *and* 1° 24′" read "—1° 20 *and* —1° 24," and omit the sign of minutes (′) after fractions of degrees of temperature here and elsewhere.

Page 12, above the table, "*Bitter Root Valley, means of two years*" belongs to first line in table.

Page 12, line 4 from bottom of table, for "27.1" read "37.1."

Page 12, line 16 from bottom of table, for "*then*" read "*there.*"

Page 13, line 11 from bottom, "*as has been here shown*" refers to p. 23.

Page 13, line 17 from bottom, "*Vol.* I," i. e. of P. R. R. Reports.

Page 14, "GENERAL CONCLUSIONS" should have come at the end of the chapter.

Page 15, line 7 from top of table, for "16.10" read "16.07."

Page 15, line 15 from top of table, for "35.30" read "32.07," and for "32.10" read "32.66." (The latter figures are those given by Blodgett in the U. S. A. Met. Reg.)

Page 15, line 7 from bottom, for "4° $\frac{20}{100}$" read "4° $\frac{23}{100}$."

Page 16, in the first table all the figures of 1st column are "——" (below zero); in the second table, 2d column, lines 5, 8, 11, 14, 15, "*none*" is to be understood; 3d column, line 11, for "53°" read "53 *days*."

Page 18, between tables, "†*Same days as at Montreal*" was intended for copyist, who should have arranged the table accordingly.

Page 18, in both tables the figures in 5th column are probably all about 3° 20 too high.

Page 19, line 3 from bottom of 1st table, for "2.900" read "2.700."

Page 19, line 3 from bottom of 1st table, for "3.500" read "3.300."

Page 19, 2d table, the figures are all "——" (below zero.)

Page 19, 2d table, for "*N.ENW.*" read "*NE.NW.*"

Page 20, line 2 from top, for "*blows*" read "*blew.*"

Page 20, line 15 from top, after "*that*" read "*of.*"

Page 20, line 16 from top, for "1852" read "1853."

Page 20, line 19 from top, for "*February*" read "*January.*"

Page 20, line 28 from top, for "*two-fifths*" read "$\frac{3}{15}$."

Page 20, line 32 from top, for "+" read "×."

Page 21, line 7 from top, for "*rarefication*" read "*rarefaction.*"

Page 22, line 5 from top, for "*the less*" read "*that less.*"

Page 23, near middle, for "1822–'23" read "1832–'33."

Page 24, line 8 from top, after "*influence of*" read "*this.*"

Page 24, line 10 from top, omit "*both.*"

Page 24, line 24 from top, for "*by*" read "*from.*"

Page 24, 1st table, column 4, for "2,900" read "2,730."

Page 24, 2d table, column 4, for "3,420" read "3,412."

Page 24, 2d table, column 10, for "27.06" read "27°.6."

Page 25, line 9 from bottom, omit the period.

Page 26, line 2 from top, for "13*th*" read "14*th.*"

Page 26, column 3 in table, for "53° 43′" read "52° 43′."

Page 26, column 3 in table, for "84° 33′" read "84° 43′."

Page 26, column 4 in table, for "1,600" read "1,876."

Page 26, column 4 in table, for "2,652" read "2,730."

Page 26, column 4 in table, opposite Walla-Walla, for "600?" read "1,396."

Page 26, column 5 in table, for "12-12" read "1$\frac{2}{12}$."

Page 26, column 8 in table, for "42° 8′" read 43° 8′."

PART II.—BOTANICAL REPORT.

Page 10, line 8 from bottom, for "*a*" read "*so.*"

Page 11, line 15 from top, for "*eastern*" read "*western.*"

Page 18, line 20 from top, after "*perhaps*" read "*these prairies.*"

Page 18, line 15 from bottom, for "*leaves*" read "*bases.*"

Page 19, line 20 from bottom, after "*produced*" read "*by.*"

Page 26, line 18 from top, for "*saguinea*" read "*sanguinea.*"

Page 26, line 21 from top, for "*Corylas*" read "*Corylus.*"

Page 26, line 25 from top, for "*Spisea*" read "*Spiraea.*"

Page 26, line 8 from bottom, for "*Oropehila*" read "*Oreophila.*"

Page 27, line 19 from top, for "*Azalea*" read "*Aralia.*"
Page 27, line 1 from bottom, for "*seed*" read "*red.*"
Page 28, line 18 from bottom, for "*as*" read "*or.*"
Page 28, line 4 from bottom, for "*Hyetat*" read "*Hyetal.*"
Page 29, line 1 from top, for "50" read "45."—(See Part I, Chap. IV, p. 293.)
Page 30, line 6 from top, for "7" read "27."
Page 32, line 8 from top, for "*the*" read "*Shoalwater,*" (always meant by "the bay.")
Page 34, line 3 from top, for "*Phalacrocorax*" read "*Graculus.*"—(See Part III, p. 267.)
Page 34, line 8 from top, for "*Cultellus*" read "*Machaera.*"—(See Part III, p. 385.)
Page 39, line 21 from bottom, for "*Menzelia*" read "*Mentzelia.*"
Page 41, line 9 from bottom, for "*Anoplavthus*" read "*Anoplanthus.*"
Page 41, line 8 from bottom, for "*Towrn*" read "*Tourn.*"
Page 50, lines 7 and 9 from top, for "*carnosa*" read "*comosa.*"
Page 50, "*Anoplanthus uniflorus,*" though the specimens are only one-flowered, yet they agree in color with *A. fasciculata,* and are probably a variety of that species, *(Orobanche fasciculata, Nutt.)*
Page 52, line 20 from top, for "*B. Bix*" read "*R. Br.*"
Page 52, line 21 from top, for "*Seeys*" read "*Selys.*"
Page 52, line 26 from top, for "OEIGOSPERMA" read "OLIGOSPERMA."
Page 53, line 15 from bottom, after "ACER" omit the period.
Page 54, line 11 from bottom, for "M" read "MELILOTUS"
Page 62, line 10 from top, for "*rich*" read "*March.*"
Page 65, lines 6 and 7 from bottom, "*S. decipiens*" is a distinct species, and should have come in with a separate paragraph.

PART III.—No. 2.—REPORT UPON THE MAMMALS.—(Page 73.)

Page 74, line 22 from bottom, for "*glassy*" read "*glossy.*"
Page 76, line 20 from top, for "CALIFORNIA" read "CALIFORNICA."
Page 78, line 9 from bottom, for "HORIBILIS" read "HORRIBILIS."
Page 102, near middle, for "*Oregon mole*" read "*Oregon mouse.*"
Page 116, line 20 from top, for "MEPHITES" read "MEPHITIS."

No. 3.—REPORT UPON THE BIRDS.—(Page 140.)

Page 143, line 9 from bottom, for "*Cal.*" read "*Cab.*"
Page 145, line 4 from bottom, insert: "*Female.* Length, 18 to 20 inches; wing, 10 to 11; tail, 8.50. *Male.* Length, 16 to 18; wing, 9.50 to 10; tail, 8 inches."
Page 159, at top, insert: "ORDER II.—SCANSORES.—CLIMBING BIRDS."
Page 160, line 17 from bottom, for "SPHYROPICUS" read "SPHYRAPICUS."
Page 160, line 4 from bottom, omit "*in*" after "*iris.*"
Page 163, line 23 from top, for "*so*" read "*as.*"
Page 165, line 12 from bottom, for "*then*" read "*there.*"
Page 169, line 9 from top, for "*Denaidura*" read "*Zenaidura,*" and omit the comma after it.
Page 170, NOTE.—The notes by Dr. Cooper (marked C.) belong to the following species:

? EMPIDONAX FLAVIVENTRIS, Baird. YELLOW-BELLIED FLYCATCHER.

? TYRANNULA FLAVIVENTRIS, WM. M. & S. F. BAIRD, Pro. Acad. Nat. Sc. Philad. I, July, 1843, 283.—IBID, Am. Journ. Sc. April, 1844.—AUD. Birds of Am. VII, 1844, 341, pl. 490.—BAIRD, Gen'l Rep't Birds, p. 198.

? *T. pusilla,* REINHARDT, Vidensk Meddel. 1853–'54, p. 82.—GLOGER, Caban. Journ. 1854, 426, (not Swainson ?)

? *Empidonax hypoxanthus*, BAIRD, provisional name for eastern specimens; Gen. Rep Birds, p. 198.

EMPIDONAX DIFFICILIS, *Baird*, provisional name for western specimens, in same work.

For full description, see the General Report, (Vol. IX, P. R. R. Rep'ts.)

The western specimens differ so much from eastern, that Prof. Baird was induced to give them a different name *provisionally*, and when better known they may prove a distinct species. The chief differences are: colors lighter; first quill intermediate between 6th and 7th; second considerably shorter than fourth. Dr. Cooper's specimens measured:

No. 7243. Shoalwater Bay, July 4, 1854. Length, 5.50; extent, 8.50 inches;

No. 5920. Fort Steilacoom. Length, 5.60; extent, 8.50; wing, 2.83; tail, 2.45. Both had the iris brown; bill black above, pale flesh color below; feet black.—C.

Page 180, line 6 from bottom, for "*last*" read "*next.*"

Page 185, line 6 from bottom, for "*next*" read "*last.*"

Page 190, line 12 from bottom, for "9.75" read "6.75."

Page 195, line 23 from top, for "*atricapillus*" read "*occidentalis.*"

Page 219, line 12 from bottom, for "*rather*" read "*rarer.*"

Page 221, line 18 from top, for "*tail*" read "*true.*"

Page 238, line 8 from bottom, No. "371" is put in this species by Mr. Cassin, though 1.75 inch longer, and with a bill 0.81 longer than in the description. He also attributes *M. scolopaceus* to W. T. on the authority of Dr. Suckley, but mentions no specimen resembling it except this one.—(See Gen. Rep. Birds, p. 712.)—C.

Page 265, line 14 from bottom, insert "BAIRD and LAWRENCE, Gen. Rep. Birds, p. 868."

Page 265, lines 1 and 2 from bottom, for "*cruta*" read "*crura.*"

Page 267, line 10 from top, for "*Carvo*" read "*Carbo.*"

Page 268, line 12 from top, for "*P. Townsendi*" read "*G. dilophus.*"

Page 286, line at bottom, read, "Length, 9.75; extent, 17.75; iris brown, bill black, feet pale flesh color, with bluish webs."

Page 287, line 3 from top, read, "Length, 8 inches; extent, 16.25; iris grayish, bill black, feet gray with black webs."

Page 287, line 16 from top, for "17$\frac{3}{4}$" read "18.25."

Page 290, line at bottom, for "*psittacauda*" read "*psittacula.*"

No. 4.—REPORT UPON THE REPTILES.—(Page 292.)

Page 295, line 13 from bottom, for "*vestae*" read "*vertex.*"

Page 296, line 21 from top, for "*corcinna*" read "*concinna.*"

Page 298, line 23 from top, for "*decide*" read "*divide.*"

Page 299, line 19 from top, for "1856" read "1859."

No. 5.—REPORT UPON THE FISHES.—(Page 307.)

Page 316, in table, for "*Salmo gibber, Suckley,*" read "*Salmo proteus.*"—(See p. 339.)

Page 321, line 20 from top, for "*General Report*" read "*this volume.*"

Page 323, line 18 from bottom, for "*is not probable*" read "*is probable.*"

Page 327, line 18 from top, for "*Vol. X*" read "*this volume.*"

Page 332, line 8 from bottom, for "*the Pacific R. R. Reports*" read "*this volume.*"

Page 345, line 13 from bottom, for "*F*" read "*Salmo.*"

No. 6.—REPORT UPON THE MOLLUSCA.—(Page 369.)

Page 369, line 10 from top, for "*J*" read "*I.*"
Page 372, line 20 from top, for "*Pruss*" read "*Purp.*"
Page 372, line 2 from bottom, for "*specimen*" read "*species.*"
Page 373, line 3 from top, for "*punctature*" read "*punctatum.*"
Page 373, line 6 from top, for "*uniden*" read "*brevidens.*"
Page 373, lines 21 and 22 from top, for "1836" read "1856."
Page 374, line 2 from bottom, for "*Abbaldingen*" read "*Abbildungen.*"
Page 375, line 13 from top, for "*perfection*" read "*perforation.*"
Page 376, line 5 from top, for "*synonomy*" read "*synonymy.*"
Page 376, line 6 from top, for "1857" read "1856."
Page 379, line 9 from top, for "*Sowerby;*" read "*Sowerby's.*"
Page 379, line 12, "OSTREA EDULIS?" Mr. Carpenter is of opinion that this is a distinct species, and on comparison with European specimens it does show differences.
Page 380, line 4 from top, omit the words between brackets.
Page 380, line 2 from bottom, for "*S*" read "*L.*"
Page 381, line 8 from top, for "*Philad*" read "*Philos.*"
Page 382, line 6 from bottom, for "*pelatii*" read "*petitii.*"
Page 382, line 3 from bottom, for "*synomomy*" read "*synonymy.*"
Page 383, lines 8, 7, 4, 2 from bottom, for "*Camellifera*" read "*Lamellifera.*"
Page 383, line 2 from bottom, for "*none*" read "*worn.*"
Page 383, line 11 from bottom, for "*large*" read "*larger.*"
Page 385, lines 4 and 3 from bottom, for "*Sphoenia*" read "*Sphaenia.*"
Page 385, "*Machaera Nuttalii.*" This shell is correctly figured and described in "Portlock and Dixon's Voyage Round the World:" London, 1789, Plate, fig. 2 and page 354, under the name of Solen patulus. It must therefore be called MACHAERA PATULA.

PART II.

EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN.
WAR DEPARTMENT.

ROUTE NEAR THE FORTY-SEVENTH AND FORTY-NINTH PARALLELS, EXPLORED BY I. I. STEVENS,
GOVERNOR OF WASHINGTON TERRITORY, IN 1853-'55.

BOTANICAL REPORT.

WASHINGTON, D. C.
1859.

CONTENTS.

No. 1.

REPORT UPON THE BOTANY OF THE ROUTE.

BY J. G. COOPER, M. D.

No. 2.

CATALOGUE OF PLANTS COLLECTED EAST OF THE ROCKY MOUNTAINS.

BY PROF. ASA GRAY.

No. 3.

CATALOGUE OF PLANTS COLLECTED IN WASHINGTON TERRITORY.

BY J. G. COOPER, M. D.

LIST OF ILLUSTRATIONS.

PLATE I.—A. ASTRAGALUS FILIFOLIUS.

Page.

FIGURE 1. Pistil enlarged. 2. Cross section of the ovary enlarged. 3. Legume transversely divided. 4. Same longitudinally divided 38

B. ASTRAGALUS BISULCATUS.

FIGURE 5. Fruit with a leaf, &c. 6. Fruit, with the calyx, &c., transversely divided, enlarged to thrice the natural size 38

PLATE II.—MUSENIUM DIVARICATUM.

FIGURE 1. Vertical section of a flower. 2. Fruit. 3. The same, with the mericarps separating. 4, 5. Cross sections of the fruit and seeds. The details variously magnified 39

PLATE III.—ENDOLEPIS SUCKLEYI.

FIGURE 1. Staminate flower. 2. Vertical section of the same, with the lobes of the calyx inflexed. 3. Pistillate flower, with the involucre entire. 4. Same, with one side of the closed involucre cut away. 5. A 4-leaved calyx of a pistillate flower. 6. Pistillate flower with its 3-leaved calyx, the involucre removed. 7. Pistil, with its ovary divided. 8. Fruit in its involucre. 9. Same, with one side of the involucre cut away. 10. The seed with its funiculus; the micropyle has become superior. 11. Embryo detached. The details all variously magnified 43

PLATE IV.—OBIONE SUCKLEYANA.

FIGURE 1. Staminate flower spread open. 2. Pistillate flower in its involucre. 3. Same vertically divided. 4. Fruit in its involucre. 5. Cross section of the same. 6. Longitudinal section of the same. 7. The seed vertically divided. Details variously magnified 43

PLATE V.—ASTRAGALUS (HOMALOBUS) SEROTINUS.

FIGURE 1. Vexillum, wing, and a keel petal. 2. Stamens, &c. 3. Calyx and pistil. 4. Legume transversely divided, &c. The details magnified 47

PLATE VI.—OROBUS LITTORALIS.

FIGURE 1. Vexillum, wing, and a keel petal. 2. Calyx. 3. Stamens. 4. Pistil. 5. Inner face of the style. 6. Legume. 7. Same with one valve removed. All the details except 6 and 7 enlarged 54

No. 1.

REPORT ON THE BOTANY OF THE ROUTE.

By J. G. COOPER, M. D.

THE CASCADE MOUNTAINS.

The most superficial examination of the natural productions of Washington Territory cannot fail to show that it possesses a remarkable variety of botanical and zoological regions, each distinguished by more or less peculiar forms of life. A concise and systematic account of them, as far they fell under my observation, seems necessary to complete the scattered notes on the distribution of species which I have already given. Reversing the usual order, I commence with the most elevated region, which was one of the first I visited.

At an elevation of 5,000 feet above the ocean we found the vegetation and animals *subalpine* in character, but still with a preponderance of those belonging to the lower country. On the hills, there but partially covered with forests, we found, during our visit in the first week of August, a profusion of berries of several kinds, which the Indians were engaged in collecting. Among them was a huckleberry not before seen, (*V. myrtilloides?* Michx.,) with fruit nearly as large and as finely flavored as a grape. Two kinds of pine, (*P. monticola*, Dougl.,) resembling the white pine, and (*P. ponderosa*, Dougl.,) with a magnificent species of mountain spruce, (*A. nobilis*, Dougl.,) were the characteristic trees, replacing, to some extent, those of the lower regions. Blue, purple, red, yellow, and white flowers, in rich profusion, ornamented the surface; and the whole region looked more like a garden than a wild mountain summit, covered for nearly half the year with snow.

On the morning of August 9, a rain having extinguished the burning of the forests below us, and cleared away the smoke which had for several days obscured the view, there was revealed to us a scene probably unsurpassed in magnificence by any in America. Five snowy peaks surrounded us, rising many thousand feet above our camp; and we found that we were still far below the limits of perpetual snow. From a distant view I supposed that dwarf vegetation continued on these peaks for a thousand feet higher, forming the truely *alpine region*, and I much regretted that time did not permit me to explore this. Months might be well spent in collecting in this most interesting region, even above the limits of the forest growth. It is well known to have even a group of large animals peculiar to it—such as the mountain sheep and goat, white grouse, and probably others. A dwarf glaucous juniper, (J. COMMUNIS,) with large berries, spreading like a carpet on the summit of the highest point I ascended, was the most characteristic subalpine plant, and seemed to be limited to that region, as none occurred lower down. This point was, by the barometer, nearly 5,103 feet above the sea. The vegetation of August, at this height, corresponded to that of May at Vancouver, many of the same plants occurring in flower, though of a more stunted growth. But spring, summer,

and autumn are so crowded into the space of three to five short months that even the subalpine region may be said to have but two seasons—first, that of vegetation, and secondly, winter, continuing for the rest of the year, while the ground is covered with snow. Though the days were very warm during our stay there, ice formed at night one-third of an inch thick at our camp; and we had a violent and cold hailstorm, which for a short time buried the flowers, thus in an hour changing summer into winter.

The precise limits of the seasons cannot be definitely fixed, and probably vary much in different years and on the different exposures of the mountains. About the 12th of the following October snow fell in the Nachess Pass during Lieutenant Hodge's journey across it, its elevation being nearly the same, 4,890 feet above the sea. Snow is known to fall at this height in every month between September and May, but it does not lie constantly for so long a time, and vegetation probably goes on during both those months, and even for a month or two longer. But the local differences are very great and must amount to a month or more, according to the exposures of surface to sun and rain even at the same elevation. There is no *dry season* at this height, as clouds are almost constantly hovering about the peaks, and rain can be seen even from the valleys below, falling at all seasons, especially on the more westward parts of the range.

I found animals more abundant in this cool elevated region than below. The large herbivorous quadrupeds had sought the fresh spring-like herbage, and were probably followed by many beasts of prey. Ducks, geese, and cranes abounded, with the interesting little phalarope, seeking these cool regions to raise their young; but in our hasty journey across I could merely glance at the multitude of new beings which surrounded me.

The moist hollows between the mountains were densely covered with rank grass, promising rich pasturage for the herds which, when the country becomes more settled, will doubtless be driven there during the summer, when the plains eastward are parched by drought. In healthiness and in beauty of scenery these mountains cannot be excelled.

On the 11th of August we commenced to descend the eastern slopes of the Cascade range near the base of Mount Adams, and at once found ourselves in quite a different natural region from any before seen. Although forests continue as on the western slopes, they are composed of entirely distinct species of trees, and have a very different appearance. Instead of spruces, one pine almost exclusively prevails, (P. PONDEROSA, called "Yellow Pine,") growing usually over a hundred feet high, with a straight clear trunk three to five feet thick, branching at the height of about forty feet. Its bark is thick, reddish, and deeply furrowed, like that of the chestnut. The wood is said to be unusually heavy and useful for many purposes, besides being excellent fuel. A few of the smaller "White Pine" and stunted larches are mixed with this on the higher parts of the slope, and descending below, about the elevation of 3,500 feet, the oak began to reappear.

There is a little underbrush in these forests that a wagon may be drawn through them without difficulty, forming a striking contrast to the dense thickets of the western slopes, to be hereafter described. The level terraces, covered everywhere with good grass and shaded by fine symmetrical trees of great size, through whose open light foliage the sun's rays penetrate with agreeable mildness, give to these forests the appearance of an immense ornamental park. Almost the only shrub is a *Ceanothus*, (C. VELUTINUS, *Dougl.*,) with beautiful shining foliage, and a strong aromatic order something like cinnamon, growing in scattered thickets.

This beautiful forest continued for about twelve miles eastward from Mount Adams. It

occupies a zone along the eastern side of the mountains between the heights of 2,500 and 5,000 feet at the Columbia river, and becoming lower as we go northward, until at Fort Colville and on the Okanagan river, at latitude 49°, it extends quite down to the level of the rivers, occupying all the surface except some small prairies in the valleys.

At the mountain gaps of the Columbia and Yakima rivers trees also extend further down along the streams, but in small numbers. The well marked and usually abrupt lower limit of these forests evidently corresponds to the degree of moisture derived either from the rains of the mountain summits, or from the rivers. The moist winds from the ocean, intercepted by the highest ridges, pass through the two gaps above mentioned, and to a small extent favor the growth of trees lower down. Doubtless the cessation of fires on the dry plains will be followed by a further increase of forests in such places.

North of latitude 48°, the country being generally hilly, is better supplied with rains; and on on the *northern* slopes of the hills I observed dense forests, while frequently their *southern* exposures were bare, showing the direction of the prevailing winds and consequent moisture. This fact was also noticed by others among the eastern spurs of the Rocky mountains. The same effect is well marked southward on Cape Mendocino, in California; while thirty miles south of San Francisco trees almost entirely of a distinct and southern group grow chiefly on the *southern* slopes, indicating a corresponding difference in the direction of the moist winds.

The dry season was already far progressed, and I found, therefore, but few plants in a condition for preservation, though those collected happened to be of peculiar interest.—(See *Phœlipœa comosa*, *Erigeron Douglasii*, *Pœonia Brownii*, *Spraguea umbellata*, *Acer glabrum*, &c.) The entire vegetation seems to belong to the Rocky mountain group much more than that of the western slopes, although several of the plants are, as far as known, peculiar to this range and the Sierra Nevada.

A corresponding group of animals also first appeared there, such as the coyote, badger, and Say's striped squirrel; but large game continued very scarce, and the season was unfavorable for birds, which seemed to have almost all deserted these forests during August.

To complete their description, I extract from my journal the notes on these forests as they appeared further north, and at later seasons.

On September 13 I rode from the camp on the Yakima about fifteen miles up its valley, and found the forest commencing about six miles up, at an elevation of about 2,200 feet, as abruptly as where we left it before, with exactly similar vegetation and the same dreary absence of animal life.

On the 20th the expedition crossed the ridge separating the waters of the Yakima and Pisquouse rivers. There, 5,750 feet above the sea, we found a scattered belt of forest, in which the larch (L. OCCIDENTALIS, *Nuttal*) appeared, of great size, and about equal in abundance with the pines. This magnificent tree sometimes excels the latter in size, and its feathery foliage, just beginning to fade yellow, gave it a beautiful appearance in contrast to the deep green forest around it. With these were a few scattered spruces of several species, which I could not well determine, finding no cones.

From the summit of this ridge we had a panoramic view of a vast extent of country on all sides of us. Towards the west the numberless irregular peaks of the Cascade range looked like the confused waves of a rough sea. Below their highest snow-capped peaks the belt of forest could be plainly seen extending down on spurs to the Columbia, but crossing it only at a far distant point near the northern boundary of the "Great Plain," which extended eastward

as far as we could see. But large portions of the ridges west of the river were also bare of trees to an apparent height of about 3,000 feet. Further north we met with none but scattered patches of forest, until reaching the high ridges bounding the vallies of the Methow and Okanagan rivers, where, as well as along their banks, trees are grouped in beautiful groves, forming a sufficient supply for the population which must in time inhabit these picturesque valleys.

I have already noticed the prevalence of the forests near the 49th degree along the Columbia, and most of the country thence south to latitude 38° 30′ is occupied by them.

From Fort Colville, southward, to the Spokane river, we found a pleasing country of mixed forests and prairies, with a fertile soil, which is evidently in part due to the intermingling of spurs of the Cascade mountains with those of the Bitter Root range, which appear towards the east well covered with forests on their higher parts. They intercept and precipitate over these northern tracts sufficient moisture to make them highly fertile.

The lowest points on the Great Plain where trees are found in any abundance are about 2,000 feet above the sea. This most elevated division of the great forest regions of the Territory, covering only the mountain slopes and summits, botanically and zoologically constitutes a southward extension of the more northern flora and fauna following the mountain ridges, and thus irregularly interlocking with the third great region of plains. Towards the east and south a dryer climate is found to diminish the extent of forests, until gradually rising higher and higher towards the line of perpetual snow, at length they almost disappear on some of the eastern slopes of the Rocky mountains and on the ranges of southern Oregon and Utah.

GREAT PLAIN OF THE COLUMBIA.

Although the great forests west of the Cascade range might most naturally follow in the description of regions after those just mentioned, being allied to them in products and in relation to climatic agencies, I prefer to give here the brief and incomplete observations which I was able to make during our journey over the Great Plain, occupying the central portion of the Territory.

This region, characterized by an entire absence of trees, occupies an intermediate place in elevation between the mountain forests and the lowlands. Though its name gives the impression of a surface uniformly level, it has (as remarked in my preliminary report) its mountains and valleys, which cannot be separated by any peculiarities of natural products, and must, in a technical sense, be considered as a part of the "plains" region. Thus, on the divide between the Yakima and Pisquouse, I noted that the forests did not appear until near its summit, at nearly 5,000 feet elevation.

East of Mount Adams the greatest height of the woodless ridges is 3,000 feet, at the Spokane river about 2,600 feet, and the lowest point near the centre of the Columbia plain, at Walla-Walla, is 409 feet above Vancouver. Though the cañon of the Columbia is cut down through the elevated plain to the level of 119 feet at the Dalles, the general surface around is much higher, and at the lower points there is little doubt that trees would grow freely if protected from fires, being encouraged by the constant supply of moisture carried through the gap of the mountain by the prevailing strong west winds.

I may therefore assume an average elevation of from 500 to 2,500 feet for the dry region of the central portion of the Territory, where *trees* will not grow without artificial irrigation.

This *Great Plain of the Columbia* is bounded on the north by an irregular line running between the parallels of 48° and 49°, north of which it is presumed that but few branches of it extend,

the country becoming very mountainous, and therefore well wooded. Southward it is continuous with the central plains of Oregon, through them with those of Utah, and through the South Pass with the vast plains extending eastward to the Mississippi river.

In order to show the peculiarities in the vegetation of the plain region, I have included the plants collected there in a separate list. Though made at an unfavorable season, and few in number, they show a marked dissimilarity from those obtained west of the mountains, yet many of the latter belonging to the *prairies* west of the mountains are also known to be found on the *plains* of the central districts.

One peculiar group of shrubs represent in this region the forest trees, and are characteristic of all the plain regions between the eastern base of the Rocky mountains and the Pacific. *(Purshia tridentata, Artemisia tridentata, Linosyris albicanlis, L. viscidiflora, Sarcobatus vermicularis.)*

As the most characteristic animals, I refer to the badger, coyote, or barking wolf, cock of the plains, or sage fowl; sharp-tailed grouse, or prairie chicken, and other smaller kinds, mentioned more particularly elsewhere. The antelope, buffalo, prairie dog, and some others found in other parts of the plains, doubtless are sometimes to be met with in this Territory, though we neither saw them nor heard of them as being common.

The various divisions of the plains due to differences of elevations, soil, and moisture, have each their peculiarities, which would require a long description, had my opportunities been sufficient to make it complete. A short notice of the most striking may not be without interest here.

The high ridges forming spurs of the Cascade range, extending with a gradual slope from the pine forests down to the Columbia on each side the Yakima valley, between its branches, are too dry to serve as anything but a grazing region. Some portions near their summits are also very rocky and barren, but these are comparativyly small. The greatest obstacle to cultivation is the absence of means of irrigation, but there can be little doubt of the success of winter grains on many parts of these ridges. The Spokane plain, between that river and the Snake, west of longitude 118°, resembles, in soil and elevation, the lowest part of these ridges, being from 500 to 2,500 feet in elevation. But being a great plateau, it has the advantage of retaining moisture, and in many parts are tracts sufficiently irrigated naturally for general cultivation. Alkaline lakes and marshes, and some very rocky portions, are all that cannot be made use of, but these seem to occupy comparatively a small extent of it.

On all the branches of the northern Columbia crossed by us we found valleys of various extent, which form the best portion of the plain region. Terraces varying in height from five to two hundred feet above the water border these valleys, and present various soils, from the very dry gravel of the ridges down to the fertile alluvium of the river banks. The change in the native vegetation from one to another of these is very remarkable, indicating an adaptation for various crops. Long rank grass covers the moister portions of the bottoms, and there is always some timber close to the water, except towards the mouth of the Yakima. Those valleys north of latitude 48° are doubtless the best in soil and climate, crops doing admirably at Fort Colville without any irrigation.

The lands immediately along the Columbia itself, from just below the mouth of the Spokane to near the Dalles, and all the adjoining region below the elevation of about 2,000 feet, seem available only for grazing without the assistance of irrigation. But it has, as well as the higher valleys, great advantages for effecting this object in the terraces which often

partially form a dam, and, with the immense and inexhaustible timber on the mountains, can be made to retain a supply of water both for this purpose and to assist in navigation in the mode suggested by Mr. Ellet, in the Smithsonian Contributions, for improving the navigation of the Ohio. The natural accumlation of alluvial soil in the lowest places would, without doubt, make the banks of this river the most fertile instead of the most barren of all, were it not for the extreme dryness of the climate. Like the rich valley of the Nile, it may, by irrigation, hereafter support a population as great and flourishing as that of Egypt in her palmiest days. It has also the advantage that the worst land of the Great Plain is far superior to the deserts which border the Nile valley. In the chapter on the climate of the country along the route this question of cultivatiou will be found more fully discussed, and compared with other countries.

The relations of climate to the natural productions of the central division of the Territory are very interesting, and although the data are still incomplete, they show that moisture must be the only thing wanting to produce a luxuriant vegetation.

There being little rain, of course snows must be light, but, north of latitude 48°, begin early and cover the ground throughout winter, forming an excellent protection for winter grains, besides advantages for travelling, and do not become so deep as to prevent grazing. While at Fort Colville, as early as October 24, we had a fall of about six inches of snow, almost the first storm of the season. This, however, melted off in twenty-four hours, and we found that south of the Spokane river it had been replaced by rain. After October 1 there is a fall growth of grass, especially where the surface has been burnt over, and we found the hills near the Okonagan, in October and near the Walla-Walla in November, covered with the richest green herbage. As early as February 19, 1854, Lieutenant Grover found the grass "springing up plentifully" on the Spokane plain, while the forests he had just left north and east of that river were still obstructed by deep snows. The *growing season* begins and ends early, extending from about March 1 to June, like that of the fertile valleys of California.

The time during which I collected on the central plains of the Territory, extending from August 16 to November 17, was the worst period of the year for that purpose. Yet in the small collection of eighty species of plants there are two new ones, *(Astragalus seratinus* and *Malacothrix crepoides,)* besides several others of interest, showing that at more favorable seasons the botanist may still obtain novelties in a field already more explored than any other west of the Rocky mountains. Among mammals, all kinds of which were scarce, I can only mention one as new, *(Hesperomys austerus.)* Of birds, one is new, *(Podiceps occidentalis,)* others scarcely before known, *(Picus alpolarvatus, Sittapygmaea,)* although I never saw a region so poor in these animals during summer. After October the fall migration began to bring southward many interesting species, which our rapid travelling during the short days did not allow me time to collect.

Dr. Le Conte has found several new insects among those obtained there, and the few reptiles and fish I succeeded in preserving furnish several new and interesting species.

REGION WEST OF THE CASCADE MOUNTAINS.

I now return to the western region of the Territory, including the entire surface west of the Cascade range, which I have left for the last description because it occupies the lowest portions of the Territory, and because my residence in it of two years gives me the means of describing it the most fully. Occasional extracts from my journal may show its striking peculiarities in a stronger light than mere methodical description alone. In descending the Columbia from the

Dalles, on November 17, we found the mountains to rise very rapidly in height and become suddenly densely wooded; the trees observed being usually of the species prevailing on the western slopes of the range.

This great mountain gap, unequalled in depth and extent by any on the continent, presents in some parts the perpendicular walls of the *cañon*, in others the gradual slopes of a narrow *valley*.

Even from the Dalles we could perceive a thick fog hanging in the gap, but were quite unprepared to find a heavy rain, which we entered long before reaching the Cascades, and which continued unceasing during the whole day and night following, when we reached Vancouver. Even after entering this rain we could see the bright unclouded sky of the plains eastward, but I thought the moist and milder air more agreeable than the cold dry climate we had just left. The change in the appearance of the country in the distance of a few miles was almost as great as I have since observed between New York and the isthmus of Panama in January, as we left the ground at the Dalles covered with snow, and entered a region of perpetual spring, with gigantic evergreen forests, tropical looking shrubs, and large ferns, where several spring flowers were still blooming. Even the perpendicular rocks supported a green covering of mosses, &c., over which cascades, unbroken for a thousand feet, fell from the mountains directly into the river.

This change in the character of the scenery, so strongly observable in passing from the central plains to the western region, prevails over the whole of the latter, though less marked in portions of a drier climate. The "Cascades" are noted for rain, which prevails there at all seasons, being caused by the precipitation among the surrounding cold mountain summits. This moisture assimilates the vegetation of the gap to that immediately on the coast, and the shores of the Columbia everywhere below show less of the regional peculiarities than are observed a little distance from them.

These, though not sufficiently extensive and well marked to constitute *regions*, are yet divisions important enough for separate descriptions. As a whole, the region has a surface mountainous and hilly, interspersed with fine valleys lying between the level of the sea and an elevation of about 2,000 feet at the summits of the Coast range, and perhaps somewhat more on the western slopes of the Cascade mountains.

PRAIRIES OF THE WESTERN REGION.

The first division which I shall describe is that of the prairies, which naturally follow after the central plains, of which they may be considered branches, closely similar in vegetation, and, to some extent, in animal products. They form, too, the division most important to the settler, who, in the western section, finds the *absence* of trees as desirable as is their *presence* in the open country of the interior. The prairies generally occupy the lowest lands only, and are divisible into several kinds, differing in soil, vegetation, elevation, and in the causes which produced them. To commence with the lowest, we find about the mouths of rivers running into the ocean extensive tracts of "tide-lands," resembling the salt meadows of the eastern coast, but much superior in soil and products. They are overflowed by the tide only at its highest periods about two or three times annually, and this may be easily and entirely prevented by embankments. At all other times they may be traversed without difficulty, and are so dry as to produce excellent vegetables of many kinds. Potatoes and almost all garden vegetables succeed abmirably with a little care, and even good crops of wheat have been raised on

them.* Naturally they produce luxuriant crops of grass from two to four feet high and of fine quality, which is green all summer, affording excellent pasturage at the very time when the upland prairies are dry and parched. The floods that do occur are in winter, when they do little harm.

Such tide prairies are most extensive about Shoalwater bay and near the Straits of Fuca. They are less extensive up the sound and on the Columbia and Chehalis, where the water is fresher, and are often covered with a dense growth of small spruces, crab-apple, and other bushsr.

Ascending through these to the waters entirely fresh, we find on the Upper Chehalis and Columbia, near Vancouver, tracts of meadow lying below the line of summer inundation, and therefore overflowed in many years from June to August. This has been the greatest obstacle to their cultivation, until the plan was adopted of waiting for the floods to subside, after which crops are found to flourish quite as well as if put in the ground earlier. Embanking is only partially successful, as the water soaks up from below. In most years, however, the flood produced by the melting snows is so short and partial as to be of more service than injury. The soil is very productive, and most of the plants similar to those of the tide lands. Between these meadows and the rivers there is usually a ridge, rarely overflowed and covered with trees, which conceal the view of the prairies from the water. The absence of trees is on all these evidently due to their occasional inundation either by salt water or the ice-cold flood from the mountains.

Small prairies, constantly marshy from springs, are found about the heads of rivers, especially among the mountain summits, which produce either a tall, coarse grass, or, where drier, are covered with thickets of low bushes. Such are the cranberry marshes along the coast, where we find precisely the same group of plants as on the mountains 5,000 feet higher, as well as in the most northern parts of this continent and other parts of the world.

The next and a more interesting kind of prairies consists of those which are constantly dry. These are perhaps less rich than the preceding, though varying in this respect. The best are those occupying the river bottoms about Shoalwater bay, the Chehalis, and small rivers running into Puget Sound. On Whidby's island, and other places adjoining the Straits of Fuca, are similar rich prairies, with the appearance of having been formed by a similar alluvial deposit from rivers, though now more than a hundred feet above the water. The rich, black soil is on all these from one to three feet deep, and almost entirely vegetable in composition. It of course produces every thing adapted to the climate in luxuriant profusion, though often too rich for grain, especially in the moist climate west of the Coast range. Prairies, with a drier and poorer soil, exist in a narrow strip along the sandy sea-beach, and at an elevation of several hundred feet above tide-water about the head of Puget Sound, where their soil is either sandy or gravelly, producing the same plants as those near the sea-beach, and mostly quite different from those of the rich alluvium.

I give some extracts from my notes to show the general appearance of these prairies at different seasons, and at the same time some idea of out-door life in the Territory.

March 26, 1854, I made an excursion in a sailboat up the Willopah, a river running into the north end of Shoalwater bay. "I was more pleased with this little river and its valley than with any I had yet seen. It has not, of course, the grandeur of the Columbia, but the variety

* In Nova Scotia lands precisely similar, but more subject to overflow, form the best agricultural tracts of the province.—(*Dawson's Acadian Geology.*)

and rich luxuriance of vegetation is more striking as we pass close along the banks, and at every bend are new scenes of rural beauty as pleasing because uncommon in a new and wild country. For ten or twelve miles meadows, covered even now with fine green grass, occur alternately on either side, with intervening points of higher land covered with trees. Above the limits of tide-water is a change in the vegetation and surface, the upper valley being composed chiefly of the richest prairies, surrounded by the usual dense forests."

On the 18th of July following I went with a party to explore a route through this valley to the sound. "Very few of the Indians knew anything of the trail, as it had not been used for twenty years, or since the whole tribe of Willopahs inhabiting the valley were exterminated by smallpox. Reaching the first prairie, at the head of tide-water, we loaded a pack-horse with our provisions and blankets, and, each equipped with axe or gun, started on our pedestrian adventure. The morning was delightful; the prairie covered with grass full three feet high and adorned by a great variety of flowers. It yet scarcely showed any effects of the dry season which was just commencing. Ten of these prairies, varying from a quarter of a mile to a mile in extent, occur in this valley; their soil excellent and surface generally level, though sometimes undulating, and making the most beautiful of farms with scarcely any labor. The rest of the valley is also excellent in soil, but covered with trees, and along the river bank sometimes overflowed in winter."

Crossing the Coast range (to be hereafter more fully described in the account of the forests) we soon struck prairies on the upper Chehalis river. Here the gravelly soil characterizing the whole valley between the Coast and Cascade ranges, together with a drier climate, had produced much more of the effects of the dry season than in the Willopah valley, and the grass, naturally shorter, was quite brown, while a very distinct group of flowers, still blooming in abundance, made it seem as if we had in the distance of a few miles reached an entirely new country. I recognized at once the characteristic plants of the dry prairie near Vancouver and along the Cathlapoot'l river, where the preceding summer I noted, in July, that "we passed through, in the distance of fifty miles, seven prairies from one to four miles in width, generally with abundant grass, rich soil, and forming a charming contrast to the almost impenetrable forests."

We rested a day at "Boisfort prairie," so called by a Canadian settler, the name being a French translation of the Indian name of the oak, which first appears here in going eastward. "It is one of the most beautiful of the little prairies we meet, like oases, in this wilderness of forest. Oval in form, about two and a half miles long by one in width, its surface gently undulating in long, terraced slopes. Near its centre stands a remarkable mound, conical and about fifty feet high, probably formed by the action of water, though looking very much as if built purposely by ancient inhabitants for a citadel.

"The fine fields of grain just ripe, numerous cattle, and comfortable houses, with all the pleasant appliances of rural life, gave the place the air of an old settlement, although the twelve familes there had been settled less than a year."

At short intervals, all along the upper Chehalis, and beyond it to Steilacoom, we passed through similar fine prairies, which occupy a large portion of this valley between the Coast and Cascade ranges.

The "Nisqually plains," about thirty square miles in extent, lie in irregularly oval form between Puget Sound and the Cascade range, with the Nisqually river on the south and the Puyallup north of them. Their surface is smooth and level, rising in successive terraces from

ten to forty feet high, and generally parallel to the mountains. At short intervals occur lakes, small but beautifully clear, though usually without visible outlet, the gravelly soil rapidly absorbing the water during the dry season. Few, however, dry up completely, and they become neither muddy nor stagnant, thus indicating, perhaps, a subterranean flow. Around these are beautiful groves of poplar, aspen, ash, maple, and a few pines and oaks. Scattered over the surface are rounded hills, looking like islands in the level plain, and covered with groves of the usual fir, which also sometimes grows on the slopes of the terraces. The whole plain looks like a magnificent park ornamented by the highest skill of the landscape gardener, while to the southeast, and in full view from all parts of it, stands the majestic Mount Rainier, forty miles distant, though in appearance not more than five.

On the much-discussed subject of the mounds so abundant on the prairies about Puget Sound, I must make a few remarks, since Mr. Gibbs has suggested that they might have been produced by the immense growth of the "giant root," *(Megarhiza Oregana,)* forming a nucleus around which the soil has been gradually washed away.—(Vol. I, p. 469.) I have noticed this plant quite as often on level ground and in hollows as on these mounds, and have found deep *cavities* where its roots have decayed. I cannot, therefore, consider it a cause any more than roots and stumps of other kinds, which never produce mounds so symmetrical and uniform as these are found. I would suggest that they may have been produced by *eddies and whirlpools*, probably at a time when this sound formed the estuary of a great river like the Columbia, or perhaps were branches of the great system of northwest sounds, which extends from the Columbia river to Sitka, or further. I have seen such whirlpools in the narrow inlets of the sound, during the violent ebb of the tide, that seemed to me quite capable of thus raising mounds of gravel, just as is done by the eddies of the wind with the light sand along the sea shore and on the plains. Any vegetable origin must be quite inadequate to produce such mounds as I have seen along Black river, which I believe were never seen by Mr. Gibbs. There they stand so close together that it is impossible to walk between them without stepping on the adjoining slopes, and, while standing at their bases, I could not see over them. Such covered the surface for miles near the western border of the prairies, there being none in the adjoining forest. Their form, as is there most distinctly marked, is very perfectly circular; height from a scarcely perceptible swell to eight feet, and diameter at least six or eight feet. Their leaves do not coalesce, though close together when they are well marked. The low ones seem to have been partially covered, so as to conceal their bases, and form level intervals between the summits that still protrude.

NOTE.—Mr. Gibbs, in his Geological Report, dated two months later than the above reference, (Vol. I, p. 486,) says that their origin "is clearly due to water."

In a journey up the Chehalis and down the sounds to the Straits of Fuca, in March, 1855, I found vegetation as far advanced as is usual in May at New York. Strawberries, &c., were beginning to flower, and many summer birds had arrived, including the delicate humming bird, swallows, and warblers. Indeed, the mildness of the winters makes the prairies more green and beautiful at that season than in summer, and up to the end of December, 1853, I found several flowers still blooming about Vancouver.

Many of the richest prairies are much injured by a dense growth of fern or brake, which grows on them eight feet high, and as it also occurs about two feet high on the poorer soils, becomes a sure indication of richness. It is said that by cutting off for a few times at a height of several inches the stems will "bleed" to death, the sap running so as to exhaust the roots.

The other vegetation of these prairies is too varied for special enumeration here. Most of the plants found in them are mentioned in my list of those collected west of the Cascade range. Of the 360 species there given, more than 150 are peculiar to these prairies, being a very large proportion considering their small extent in comparison with the forests. It is also observable that these are of a group characteristic of the Great Plains and California, of which botanical regions these prairies form the northwestern outskirts.

From February to July they look like gardens, such is the brilliancy and variety of the flowers with which they are adorned. The weary traveller, toiling through the forests, is sure to find in them game, or, at least, some life to relieve the gloomy silence of the woods.

The narrow strip of sandy prairie along the sea beach is particularly interesting to the botanist, for there he finds many beautiful plants not seen elsewhere, which, wandering from more southern climes, meet in the adjoining cranberry marshes the cold-loving northerners before alluded to as common in the swamps.—(See *Abronia arenaria and umbellata, Orobus littoralis, Cymopterus? littoralis, Fragaria Chilensis, Franseria,* (*two species,*) *Calystegia, Soldanella,* &c.

A few remarks are necessary upon the origin of the *dry* prairies so singularly scattered through the forest region. Their most striking feature is the abruptness of the forests which surround them, giving them the appearance of lands which have been cleared and cultivated for hundreds of years. From various facts observed I conclude that they are the remains of much more extensive prairies, which, within a comparatively recent period, occupied all the lower and drier parts of the valleys, and which the forests have been gradually spreading over in their downward progress from the mountains. The Indians, in order to preserve their open grounds for game, and for the production of their important root, the camas, soon found the advantage of burning, and when they began this it was only those trees already large that could withstand the fires. Occasionally gigantic fir trees, isolated or in groups. show, by their immense size, that these prairies have not been produced nor always exposed to fires, for they must have attained a considerable age before they could have resisted fire.

Tbe introduction of the horse, about the beginning of this century, was a further inducement for burning, and doubtless also caused an increased settlement in the prairies by these people, hitherto accustomed to travel mostly by water, and to depend upon fishing for their subsistence. On some prairies near Vancouver and Nisqually, where this burning has been prevented for twenty years past, young spruces are found to be growing up rapidly, and Indians have told me that they can remember when some other prairies were much larger than at present. That they never were covered with forest is shown by the perfect smoothness of their surface; while in places very completely cleared of forests by fires are always found mounds and hollows, left by stumps, and an immediate growth of shrubs and trees follows, showing a tendency to return to forest, instead of to form prairies. Great changes must have occurred in the conformation and climate of this part of the coast since forests began to cover a surface once probably as bare as that of the Central Plains.

Several kinds of animals are closely confined to these prairies or their borders. Among them are the deer, rabbit, gopher, meadow-mice, and, in less degree, probably, the sewellel, (*Aplodontia,*) mole, prairie-mouse, (HESPEROMYS AUSTERUS,) which seems, like the plants, to have wandered from the east side of the Cascades to Steilacoom. Wolves and foxes are scarce, compared to their numbers on the plains, while their associates there, the badger, cayote, and other species, have not been found west of the Cascades.

Few birds are strictly peculiar to them, though almost all the smaller species, shunning the dense forests, frequent their borders. The shore lark and Savannah sparrow are, perhaps, the only land birds never seen in the woods, while some waders frequent their marshy portions, with the brown crane and Canada goose, which are never or rarely seen along the sea shore. The prairie chicken, sage fowl, Oregon and California quails, are worthy of introduction.

FORESTS OF THE WESTERN REGIONS.

The forests of the western regions deserve a particular description, since, though they are less important than the prairies to the agriculturist, they are one of the principal sources of commercial wealth to the Territory.

As I believe no attempt has been yet made to point out in a systematic manner their natural characters, distribution and useful properties, I will here mention each species in the order of its importance.

It will be observed that they are nearly all of different species from those constituting the forests east of the Cascade range, though some of them are supposed to extend much further eastward, north of the Territory, as they reappear upon some of the highest parts of the most eastern Rocky mountains.

The country bordering on the lower Columbia has been celebrated ever since its discovery for the gigantic growth of its forests. Even species so nearly resembling those of the Atlantic States as to be generally considered identical attain a much greater size.

The mild climate and abundant moisture causing a longer growing season may be considered, perhaps, as one cause of this increase in size. It seems certainly to have an influence upon many smaller plants, and most strikingly so on cultivated vegetables, whose seeds we know to have been brought from the east. The great height to which trees grow may also be due to the rarity of lightning, as it is well known that thunder-storms, though common on the mountains, are very rare in the valleys.

CONIFEROUS TREES.

The tree most abundant, and therefore most characteristic of these forests, is that of which varieties are known in the Territory as "red" and "black fir," (ABIES DOUGLASSII.) It is, at the same time, the species most generally useful. Its foliage resembles that of the white spruce of Canada, but the leaves are larger and longer. Its cone is also very different from that of any other spruce, being ornamented with three-parted bracts between the scales, which at once distinguish it. Its trunk is straight, commonly without branches for fifty feet or more, and covered with a thick bark, resembling, in its ashy color and deep furrows, that of the chestnut. The wood is rather coarse-grained and liable to shrink, but is more used for lumber than any other, being adapted for all kinds of rough work exposed to the weather. It also forms excellent fire-wood even when green, and in dead trees the bark and wood are often so full of resin as to burn like a torch. From its combustibility extensive tracts of this forest get burnt every year, taking fire from friction or any other slight cause. During our ascent of the western slopes of the Cascade range we passed for days through dead forests, perhaps burnt by ignition from the hot ashes which were thrown out from Mount St. Helens several years before; but large tracts were on fire at the same time, filling the air with smoke, so that we could not see the surrounding country for several days. Large tracts of the eastern slopes of the Coast range are also desolated by the same cause.

The fir forms the mass of forest growth on the dry, gravelly soils, from an elevation of probably 3,000 feet on the Cascade range, entirely across the valley to the summits of the Coast range, west of which it is almost entirely replaced by another species, and it is not found at all on lands subject to inundation. It is only where it abounds that extensive tracts are found killed by conflagration.

The tree known as "yellow fir" in the country (A. GRANDIS) I have met with only on the sandy alluvial river banks between the Cascade and Coast ranges, to which limits I believe it is very strictly confined in this Territory. I do not know its highest limits, but suppose that the influence of salt water may determine its most western range along the rivers, as it is strictly limited by tide-water. Its foliage is denser and darker than that of the preceding, and it is a fine looking tree, growing much higher than any other, often exceeding 300 feet. This, with the shortness of its branches, which gives its top a cylindrical shape, easily distinguish it at a distance. Its wood is much finer grained, tougher and more elastic, than that of the red fir, being especially adapted for the enormous masts and spars which are now exported from the Territory even to Asia and Europe. Much lumber, of fine quality, is also made from it along the Columbia river. Its bark is thinner and finely grooved, of a pale gray hue; the cone oval, about three inches long, and destitute of the peculiar bracts of the preceding species.

The "black spruce" (A. MENZIESII) is the characteristic tree of the coast slope, where we find it very strictly limited to the neighborhood of tide-water, though a moist climate and soil seem to be the most essential conditions for its growth, as it reappears upon the higher parts of the Cascade range, and does not extend up Puget Sound, (where the soil and climate are dry,) though common at the Straits of Fuca. It is remarkable for growing on brackish marshes, sometimes overflowed, and on inundated islands of the Columbia.

This tree has sometimes a diameter of eight feet, but is less lofty than the red fir, which is distinguished west of the Coast range by overtopping this the prevailing species. Its bark is dark reddish and scaly, not unlike that of the wild cherry of the Atlantic States, (C. SEROTINA.) Its branches commonly commence about thirty feet from the ground, and grow more densely than in any other species, while its leaves, growing in several rows entirely around the twigs, form a thick, dark green foliage, with bluish reflections when their glaucous under surface is turned upward by the wind. The cones grow near the ends of the branches, and are about two inches long, of a fine bright purple color when young. Its wood is very tough, and when not too knotty makes good masts and planks for vessels, but is poor fuel, excepting the young branches, which are very resinous. The long, tough, fibrous roots are used by the Indians to make very strong baskets and bags. It resembles the "Norway spruce" of our gardens, in general habit, more than any other.

The tree probably most generally diffused, though nowhere forming forests alone, is the "Oregon cedar," (THUYA GIGANTEA,) more nearly allied to the arbor-vitæ than to the juniper, commonly called cedar eastward. This, like the other trees, grows to an immense size, being often from twelve to fifteen feet in diameter, but is not equal to the spruces in height. Its trunk is often straight and branchless for twenty feet, but the top is so knotty as to be of scarcely any value. In lightness, softness, and durability, its wood excels any other, but is deficient in strength and elasticity. It is used chiefly for shingles, rails, and fine inside finishing. For most purposes for which the redwood of California is used it is superior, and is therefore much exported from the Territory.

A backwoodsman, with his axe alone, can, in a few days, make out of one of these cedars a comfortable cabin, splitting it into timbers and boards with the greatest ease. This the Indians did long before an iron axe was known among them, using stone hatchets, and wedges of the crabapple. They also make from its trunk those celebrated canoes, which have an elegance and lightness superior to any other except the fragile shells of birch-bark used further north. The following facts will show the wonderful durability of the wood of this cedar, which excels that of its eastern relatives, as seen in the peat-bogs of New Jersey, (*Cupressus Thuyoides*, the "white cedar:")

In the damp, dark forests close to the coast I have seen its trunks lying prostrate with several spruces, from three to four feet in diameter, growing upon them, having evidently taken root in the decaying bark, and extended their roots into the ground adjoining, while the interior of the log I found still sound, though partially bored by insects. Judging of the age of the spruces by ordinary rules, this log must have thus lain hundreds of years exposed to the full action of one of the most moist of climates.

On some of the tide-meadows about Shoalwater bay dead trees of this species only are standing, sometimes in groves, whose age must be immense, though impossible to tell accurately.

They evidently lived and grew when the surface was above high-water level, groves of this and other species still flourishing down to the very edge of inundation. But a gradual, slow sinking of the land (which seems in places to be still progressing, and is perhaps caused by the undermining of quicksands) has caused the overflow of the tides, and thus killed the forests, of which the only remains now left are these cedars. This wood is perfectly sound, and so well seasoned as to be the very best of its kind.

Continued and careful examination of such trees may afford important information as to the changes of level in these shores. That these have been numerous and great is further shown by alternating beds of marine shells and of logs and stumps, often in their natural position, which form the cliffs about the bay to a height of 200 feet. But while these remains show that the changes took place in the latest periods of the miocene tertiary epoch, there is no evidence in the gigantic forests living on these cliffs that any *sudden* or *violent* change has occurred since they began to grow—a period estimable rather by thousands than by hundreds of years.

This cedar is most abundant near the coast, but common also in damp forests nearly to the top of the Cascade range, and is known to extend northward to the western slope of the Rocky mountains, growing at a high elevation along their summits into Utah. It is recognizable by its foliage and cones, both resembling those of the arbor-vitae of Canada, but larger. Its bark, too, is thin, coming off in long riband-like strings, of which the Indians make bags and articles of dress. It has been suggested as a good material for the manufacture of paper.

The hemlock spruce (ABIES CANADENSIS?) is generally considered the same species as that found in the Atlantic States, but which does not extend north or west of Lake Winnipeg. It differs on the western coast only in superior size, which is often from six to eight feet in diameter and over a hundred and fifty feet in height; while three feet diameter and eighty feet high seem to be the maximum size of those near the Atlantic. It is found scattered through the forests from the subalpine regions down to the coast, mostly in the dampest portions, but nowhere forming forests by itself.

The "Oregon yew," (TAXUS BREVIFOLIA,) also much larger than that of Canada, though

perhaps of the same species, and much more like the European yew than that is, grows commonly in damp soil, about the edges of meadows, springs, &c. It is a tree thirty feet high and a foot in diameter, though commonly smaller, the largest being about Puget Sound. Its wood has all the toughness and elasticity of the European yew, and, like it, was formerly used for bows by the natives. Its larger and brighter leaves, smooth red bark, and coral-red sweet berries, easily distinguish it from the hemlock, which it much resembles in growth and foliage. I have seen it at a height of about a thousand feet on the Cascade mountains.

But one other coniferous tree is common in the western region—a pine (P. CONTORTA) so much resembling the "Jersey scrub pine" (P. INOPS) as to be commonly considered identical. It grows in dry, sandy prairies, forming groves along the sea beach and also high up the mountains. It grows forty feet high and two in diameter, but is of little value as timber. The range of the Jersey pine is widely separated from it, and none occur in the interval from Kentucky to the Rocky mountains.

Besides these seven species, which compose the bulk of the forests, there are a few other coniferous trees which I shall briefly mention, as they occur only in scattered localities, and are therefore of little value.

A tree called "white spruce," but very distinct from that so named in Canada, found in small numbers about the sound, becoming scarcer towards the Columbia river. It has smooth white bark, when old becoming dark; very long, shining, dark green leaves, arranged mostly in a single series; and as it branches at regular intervals and in symmetrical whorls, forms one of the most beautiful trees of this family. I never could obtain cones, as they fall to pieces after ripening, but from the characters of its leaves have little doubt of its being ABIES TAXIFOLIA, *Lambert*. It is certainly entirely distinct from the Douglass or red fir.

A few stunted trees of the yellow or heavy pine, (P. PONDEROSA,) already described, are found on the dry, gravelly plain near Steilacoom, but are so stunted as to be scarcely recognizable as the same tree so majestic on the eastern slope of the Cascade range.

A "white pine" is said to grow abundantly on the Olympia range and along the west side of Hood's Canal, where, I believe, it is sawed into lumber. I could never ascertain whether it was the species found on the Cascade mountains (P. MONTICOLA) or some other.

The Nootka cypress (CUPRESSUS NUTKATENSIS) is doubtless found in the Territory, as it grows both northward and far south on the Cascade mountains of southern Oregon, where it was found by my friend Dr. Newberry. From the general similarity of its foliage to that of a juniper, it seems probable that the tree seen by Mr. Gibbs, "in swamps at the mouth of the Snohomish river," was the former, which is much more likely to grow in such a situation than a true juniper.

A second species of arbor-vitae (THUYA PLICATA) is said by Nuttall to be found on the islands north of the Straits of Fuca, and probably extends within the Territory. "Cedars" on Whidby's and other islands resemble it in their smaller size and denser branching, but I attributed the variety to soil and did not preserve specimens.

BROAD-LEAVED TREES.

Forests almost exclusively composed of the evergreen coniferae produce, of course, but few trees of other classes; but those found in the Territory are well worthy of special notice, on account of their valuable properties.

The "*foliaceous*" trees there grow almost exclusively on the borders of prairies, river banks,

and such open situations; never in the thick forests of evergreens, though sometimes in scattered localities when not much shaded. They are thus, like the spruces, much limited by natural boundaries to particular districts.

The same oak (QUERCUS GARRYANA) which I have mentioned as found in small numbers east of the Cascade range, is more abundant in the valley between it and the Coast range, west of which I do not think there is a single oak tree. On the Columbia, Oak Point is its lowest locality, and a corresponding point on the Chehalis is near the mouth of Black river, where a few stunted oaks occur, covered with long moss, and evidently suffering from the excess of moisture in the vicinity of the coast. At the same place, and from the same cause, the "black spruce" begins to grow, and the "yellow fir" disappears.

The wood of this oak, though inferior to some kinds of the Atlantic States, is useful for many purposes to which oak wood is applied. It rarely grows more than fifty feet high and two in diameter, branching low like an apple tree, so that at a distance groves of it look much like orchards, giving to the prairies where it grows a rural and home-like aspect. It is rare on the prairies near the Straits of Fuca, but is said to extend further north. It is, however, one of the more southern group of plants which I have mentioned as belonging to the *prairies*, and is crowded out by the extension of the spruces over them. In the partial shade of these it sometimes grows slender and tall, like the oak of our eastern forests.

The "white maple," (ACER MACROPHYLLUM,) quite different from any eastern species, is the most beautiful of its family in North America. It is frequently eighty feet in height, and attains a diameter of six feet, with smooth white bark and pale green leaves from six to twelve inches in breadth. Its long racemes of yellow flowers appear with the young leaves in May, giving the tree an elegant appearance. Its wood is superior in beauty of veining to either the "curled" or "birdseye" varieties, and is capable of a high polish. Sugar has been made from its sap at the Cascades, and may yet become an important product. This maple grows from a high elevation on the mountains to the ocean; but I did not see it east of the Cascade range, where it seems to be replaced by the third species of the Catalogue, (A. GLABRUM,) a species of the Rocky mountain forests.

The "vine maple," (A. CIRCINATUM,) so called from its prostrate and tangled growth, forms almost impenetrable thickets in damp parts of the forests. It grows only twenty or thirty feet high, with a diameter of a foot at most, and is used chiefly for fuel, and boat timbers, for which its crooked stems are well adapted. Its rich purple flowers are very ornamental in April, and its leaves are the only kind that turn scarlet in autumn, like those of so many eastern trees.

The "Oregon alder" (ALNUS OREGONA) inhabits a similar extent of country, but is most abundant near the sea, where its light green foliage and white bark contrast agreeably with the dark hue of the spruce forests. It grows sixty feet high, has very soft white wood, excellent for carved wood, furniture, &c. In the dry soil of the valley it is rather scarce, but is said to reappear on the western slopes of the Rocky mountains.

Another smaller alder, (A. VIRIDIS,) little more than a shrub, grows in small numbers near Steilacoom, and is, perhaps, that mentioned by Nuttall (*"A. rubra"*) as occurring near Oak Point.

The "Oregon ash" (FRAXINUS OREGONA) grows in moist, sandy soil, on river banks, in the

valley between the Cascade and Coast ranges, but, like the yellow fir, stops at brackish water; and although a few are found down to the mouth of the Columbia, none grow along other rivers west of the Coast Range. It is a larger tree than the eastern white ash, and has all the elasticity and lightness for which that tree is so well known.

The "Oregon dogwood" (CORNUS NUTTALLII) is still more strictly limited to the above valley, and seems to disappear north of Steilacoom. It much resembles that of the Atlantic States, but is of much larger size, in all its parts, and quite equal in toughness and strength. Its white flowers, sometimes six inches in breadth, ornament the forests in April.

With a similar range, but extending quite to the Straits of Fuca, is the beautiful arbutus, (A. MENZIESII,) often called laurel. Its smooth cinnamon-colored bark and shining evergreen leaves have almost a tropical appearance among the northern spruces, and it is, indeed, like the oak, one of the few southern trees which extend from southern California northward in the prairies. It grows almost luxuriantly on gravelly points and banks at the sound, but never west of the Coast range. It attains forty feet in height and two in diameter, and its wood is very strong and heavy, so that crooked pieces are used to make anchors by binding them around stones.

Two, and perhaps more, species of poplar form the forest growth on the inundated river banks from an elevation of 5,000 feet down to tide-water. They are also found on all the rivers running from the Rocky mountains, and perhaps entirely across the continent. The latter is the "cotton-wood," (POPULUS MONILIFERA.) The other, distinguished as "balsam" or "bitter" poplar, is peculiar to the western half of the continent, (P. ANGUSTIFOLIA.) The wood of both is of little value, but they grow rapidly and are ornamental. The islands and low shores of the Columbia are covered with these trees, of larger size than I have ever seen them elsewhere.

Another poplar, (P. TREMULOIDES,) the "American aspen," common across the continent, grows on the high mountains and in small numbers about the lakes near Steilacoom, but not west of the Coast range. It is more abundant northward and east of the Cascades. Its wood is of little value, and rarely grows more than a foot in diameter, with a height of forty feet.

Many species of willow grow along the rivers, but only two or three attain the size of trees.

One, (SALIX SPECIOSA,) with very large and long leaves, seems mostly limited to the streams east of the Coast range. East of the Dalles this and a small hackberry (CELTIS RETICULATA) are the only trees seen for hundreds of miles along the Columbia.

The second (S. SCOULERIANA) is most abundant west of the Coast range, and grows thirty feet high and one in diameter, but is of little value. Its leaves are large and oval, and its flowers among the first to appear, opening as early as February 20.

The willows along river banks, by their thickly matted roots and stems, support the sandy soil, and accumulate it until it becomes high enough for other trees to grow on it.

The wild cherry (CERASUS MOLLIS) attains a height of thirty feet, and in appearance closely resembles the cultivated kinds, which may be advantageously grafted on it. Its wood is of little value, and its fruit small and bitter.

The "Oregon crabapple" (PYRUS RIVULARIS) grows sometimes twenty feet high and one in diameter, but usually forms low, tangled thickets, equal to the tropical mangroves in impenetrability. Its wood is hard and tough, used for wedges, &c., and its fruit, though small, is abundant and well flavored, ripening in October. At Astoria excellent apples have been produced by grafts on this tree.

The "Oregon buckthorn," (FRANGULA PURSHIANA,) one of three distinct plants called "bearberry" in this Territory, grows on mountain sides and open ravines to the height of thirty feet, but is less than a foot in diameter, and I believe of no especial value as timber. The berries have violent cathartic properties, and, though eaten greedily by bears, are not used by the Indians as food.

A birch (B. OCCIDENTALIS?) is said to be common north of the straits, but I did not meet with it. A low, shrubby species east of the Cascade mountains exudes from its branches a bitter resinous substance, (B. GLANDULOSA.)

SHRUBBY UNDERGROWTH.

To complete the description of the forests, I must notice briefly the numerous shrubs which constitute an almost impassable underbrush in most parts of them, and are nearly all of use either for their wood or fruits. In their distribution they are even more local than the trees, and different groups characterize very fully the districts into which the forests are divisible. East of the mountains I have remarked that a peculiar group takes the place of forests on the Great Plains. There is also another group belonging to the Rocky mountain forests which grow along the higher river banks, but, not being in a good condition during my visit there, do not appear in the list of plants collected, though I identified the following species among them: RHUS DIVERSILOBA, *Torr. & Gray;* CRATÆGUS SAGUINEA, *Pall.*, and another species, CERASUS VIRGINIANA?; ROSA CINNAMOMEA, *Linn.*; RIBES AUREUM, (a fine yellow currant;) R. CEREUM; CLEMATIS LIGUSTICÆFOLIA, *Nuttall.*

The hazel, (CORYLAS AMERICANA,) red cornel, or "willow," (CORNUS DRUMMONDII,) and barberry, are also found on both sides of this range. This latter shrub, absurdly called "Oregon grape," (BERBERIS AQUIFOLIUM, the "holly leaved barberry,") extends west to the Coast range only. It produces a blue berry, eatable when cooked, and is much cultivated in the Atlantic States as an ornamental plant. This, with a spisea, (S. ARIÆFOLIA,) a ceanothus, (C. OREGONUS,) and the hazel, form most of the underbrush of the "fir" forests between the Cascade and Coast ranges. A "mock orange" is also common from the Columbia to Puget Sound, (PHILADELPHUS.) Three species of raspberry are also found, mostly in this region, (RUBUS NUTKANUS, LEUCODERMIS, and MACROPETALUS,) but to some extent also west of the Coast range. Three species of gooseberry have similar limits, though they do not grow in the shade of forests, (RIBES DIVARICATUM, NIVEUM?, and SANGUINEUM,) and a peculiar rose is found only on the borders of the fir forest, (ROSA GYMNOCARPA.) On Whidby's island are found two shrubs of much interest on account of their locality, SHEPHERDIA CANADENSIS and a RHODODENDRON, closely resembling R. MAXIMUM, but perhaps distinct, which extends along the Cascade range into southern Oregon.—*(Dr. Newberry.)*

Near Steilacoom, and in other scattered localities, some of the shrubs belonging to the Rocky mountain group are occasionally found, (RHUS, CEANOTHUS VELUTINUS, OROPEHILA MYRTIFOLIA.) On the dry prairie two shrubs are met with—the service berry (AMELANCHIER CANADENSIS, *var.* ? ALNIFOLIA) of the northern group, and an elder (SAMBUCUS GLAUCA) which belongs to the plains. In the adjoining forests, and often very near it, grows its northern representative, (S. PUBENS, *var.* ?) meeting it here just as it does the allied elder of the Atlantic States near New York. Of the shrubs more characteristic of the black spruce forests, but which occur also on the higher and moister parts of the Cascade range, many are evergreen, giving these gloomy forests an undergrowth of almost tropical appearance, though belonging to alpine or

boreal families of plants. They do not generally obstruct these forests so much as the preceding group, and, except close to the ocean, they can be easily penetrated along the uplands. Probably the most abundant shrub is the "sallal," (GAULTHERIA SHALON,) important to the Indians from bearing a fine berry which forms much of their winter stock of provisions.

This fruit has, when fully ripe, much the same flavor as a summer apple. The sallal is not uncommon in the fir forests, where, however, it grows only one or two feet high, while near the coast it attains the height of eight feet. Its large, dark evergreen leaves and rose-colored flowers are very ornamental, and in general appearance somewhat resemble the eastern large laurel, (KALMIA,) which it here takes the place of.

Three species of huckleberry have the same range. The first (VACCINIUM OVATUM) is evergreen, with leaves much like a myrtle, and flowers from January to May, producing a black, sweet berry, which remains on it all winter.

The second, (V. OVALIFOLIUM,) with small deciduous leaves, bears a red acid fruit, tasting much like a cherry. The third (V. PARVIFOLIUM) bears a blue acid berry less agreeable in flavor.

Three kinds of gooseberry grow with these, but their fruit is not eatable, (RIBES LAXIFLORUM, BRACTEOSUM, and LACUSTRE.)

Another shrub, allied to the huckleberries, produces a dry capsule, instead of a berry, (MENZIESIA FERRUGINEA.)

The most remarkable shrub of this region is the ECHINOPANAX HORRIDUM, allied to the Azalea of the eastern States, and, like it, called "Devil's Walking Stick." Its elastic thorny stems, six feet high, and crowned at the top only by a number of very large leaves, shaped like those of a maple, are very unpleasant to encounter in the woods, as they are generally *felt* before they are *seen* in the damp thickets where they grow.

A beautiful evergreen species of wax myrtle (MYRICA CALIFORNICA?) occurs rarely about salt marshes at the coast and straits, which seems near its most northern limit, as I never could find on it either flowers or fruit.

I have already mentioned a group of plants which characterize the sphagnous swamps and cold springs at the coast as well as on the mountain tops, and in the most northern parts of the world, among which some are shrubby, (VACCINIUM MACROCARPON, LEDUM PALUSTRE, KALMIA ANGUSTIFOLIA.)

There is a remarkable scarcity of climbing shrubs in these forests—one only, a honeysuckle, (LONICERA OCCIDENTALIS,) occurring rarely in the fir forests, though several herbaceous climbers assist in obstructing them, (MEGARHIZA OREGONA; VICIA GIGANTEA, LATHYRUS POLYPHYLLUS, and others.)

The last group of shrubs to be mentioned is that growing on inundated river banks, often in the shade of poplars, and forming generally dense thickets. None of these are evergreen, and in winter these poplar woods become quite bare, while the adjoining forests are green above and below.

I have referred to the many shrubby willows which form the first growth at the edge of the water, and are often partly submerged during most of the year. Next to these is found the red cornel, already mentioned, closely resembling one belonging to the northeastern States. Another species (C. PUBESCENS) is less common in similar situations, and has a green stem. On ground a little higher, but below the summer inundation, grow two species of snowberry, SYMPHORICARPUS.) Still higher grow the excellent salmonberry, (RUBUS SPECTABILIS,) a kind of raspberry, with purple flowers and a yellow or seed fruit of delicious flavor. The crabapple,

hawthorn, wild rose, (ROSA FRAXINIFOLIA,) and fly blossom, or "bearberry," (LONICERA INVOLUCRATA,) form thickets with these. All of these also occur in damp, open places and wet prairies, where sometimes a spiraea (S. DOUGLASSII) entirely covers the surface, and closely resembles the eastern "hardhack."

One shrub, allied to the cherry, but, unlike any eastern kind, (NUTTALLIA CERASIFORMIS,) grows in damp places, and most abundantly under spruce trees on the brackish marshes.

To call these varied and magnificent forests by the general name of "pine," as is often carelessly done by travellers, neither conveys a correct idea of them to strangers nor does justice to their importance. "Spruce" would be better, but is the term applied in the Territory to the forest of black spruce west of the Coast range, while "fir" is the general term for those between this and the Cascades. Pines are truly characteristic of the forest on the eastern side of this range.

I need not here particularize the animals of these forests, since nearly all the quadrupeds collected west of the range belong to the forest exclusively. Of these, the most peculiar to them are the red lynx, (L. FASCIATUS,) bushy-tailed rat, (NEOTOMA OCCIDENTALIS,) and several little shrews and mice; while the panther, black bear, raccoon, skunk, fisher, marten, mink, weasel, Oregon tree squirrel, ground squirrel, and flying squirrel, nearly resemble eastern species; and being all climbing arboreal animals, except the skunk, are almost entirely limited to the forest.

The elk and deer may be considered inhabitants of the prairies, as they obtain most of their food there; and the little rabbit of the Territory is never found in the dense forests. Few birds inhabit their gloomy recesses, and especially in summer their silence is rarely broken, except by the harsh voice of the jay, the screaming of the hawk, or the barking of the squirrel, which, though not loud, is audible for miles. Occasionally the blue grouse or the pheasant startle the traveller with their loud whirring flight, or an owl silently glides past him, astonished at so unusual a visitor; but it is rare for the traveller to see any of the larger animals, unless provided with good dogs. The Indians, from fear of the panthers and of "skookums" as spirits, fear to go through the dense woods, except in large parties, and they are, therefore, generally a pathless and solitary wilderness. Such we found them when ascending the western slopes of the Cascade range, and the same character prevails throughout the still denser forests of the Coast range. The occurrence of many animals was a sure indication of an approach to prairies or openings.

CLIMATE OF THE WESTERN REGION.

I have already alluded to the influence of climate on the distribution of trees east of the Cascade mountains, and also to the same cause as affecting the growth of species on the opposite sides of the Coast range. As a means of comparison, I here quote the records kept at Vancouver, by which it appears that in 1852 the total fall of rain amounted to 52.45 inches; in 1853, 42.04 inches; the mean of which is 46.49 inches; while at the Dalles it was but 14.70 inches. It also appears that rain fell during every month of 1853, and that more fell at Puget Sound than at Vancouver.

West of the Coast range it is well known that more rain falls than east of it. The "Hyetat charts" accompanying the Surgeon General's Meteorological Register illustrate the difference in a very striking manner. These show the difference at Astoria to be 5 inches more in spring, 10 in autumn, and 10 in winter, giving about 60 inches for the year; while at Vancouver it is

50. In summer there is little or no difference recorded. In addition to this, the nature of the soil causes the retention of much more moisture near the coast, there being often a very tenacious clay at or near the surface. Near the mouth of the Columbia there is also much more rain than at a distance of a few miles north or south of it. I have stated that towards the summit of the Cascade range there is also a much greater precipitation of moisture, which is accompanied by the reappearance or greater luxuriance of the trees and other plants of the coast forests, and this is especially well marked in the gap of the Cascades.

I have already mentioned the difference observed in the temperature both of summer and winter at the Dalles and at Vancouver, which are in nearly the same latitude. By the same records it appears that the mean annual difference between Vancouver and Steilacoom, a hundred miles further north, is exactly 2 degrees, each season being a little cooler at the latter place. The same or a greater difference exists along the coast, but has not been recorded. The effect, however, of these differences on vegetation is scarcely appreciable, and the amount of moisture is by far the most influential. Of cultivated crops no statistics are at hand, but I have observed that in the wet summer of 1854 they did best east of the Coast range; while that of 1855 being much drier, they succeeded best west of it.

I have alluded to the mildness of the winters, and, in addition to the published records, some notes on its effects in relation to natural history may be interesting.

At Vancouver, from November 18 to January 4, 1853, the weather was very mild and rainy, though with many bright, warm days. There was often slight frost at night, but vegetation continued, and flowers of several kinds were constantly to be found on the prairie. I thought December pleasanter than the month I had spent there after my arrival in the middle of June, as it was cooler and not much more rainy.

On January 5 there was a fall of two inches of snow, and the rest of the month was clear and cool for days together, an easterly wind taking the place of the usual winter sea breeze. More snow fell on the 13th, 16th, 20th, and 24th, making in all about 6 inches, which covered the ground for two weeks. By the 26th the Columbia was closed with ice nine inches thick, which broke up on February 10. The thermometer did not fall to zero during the winter, and the lowest I noted was 15°.

On February 20 I went to the mouth of the Columbia, and remained there and at Shoalwater bay the spring following. On the 25th the native willow and chickweed (STELLARIA BOREALIS) were in flower and winter at an end, although there was a light fall of snow afterwards, and spring came slowly. This winter was one of the coldest ever known at Vancouver, where it is rare for the river to freeze at all. Its effect on the migration of birds was marked, as it drove southwards the immense flocks of swans, geese, and ducks, which usually make the Columbia their winter resort. A few birds, too, seemed to have crossed from the colder eastern side of the Cascades, (PICICORVUS,) but the greater part of the land birds, as usual, remained constantly at their summer homes, including more than twenty species.

The next winter I spent at Shoalwater bay, and made the following notes regarding it: There was white frost first on the 7th of October, and afterwards much clear frosty weather up to the last week in December, with northeast wind, unusual at this season. The last week of the year was marked by a continued and severe storm, not cold, but with heavy rains from the southwest. On December 21 I saw the large, brown salamander still crawling actively about, and the same week noticed a warbler and snipe.

1855.—The new year began clear and cold, like the last. January 2d it snowed a little, but this was washed away by a rain following after it. It again snowed on the night of the 5th, and cleared off so cold that ice formed along the shore of the bay. On the 9th the warm southwest winds again prevailed, and there was scarcely any cold weather afterwards.

January 14.—It was so warm that a bat came out and flew about the house for some hours before dark. "January 7. The weather has been, lately, growing daily warmer, with a SE. wind. Observed to-day many frogs and striped snakes, and the large slugs and salamanders are crawling about. In the evening frogs are piping their serenade, the pleasant harbinger of early spring. The myrtle-leaved huckleberry is beginning to blossom, and the buds of trees are bursting; everything seems as advanced as in April at home."

This clear, warm weather continued until February 1, when it rained again, almost constantly for two weeks. Then came another mild, clear term, followed by cold weather, ice forming $\frac{1}{4}$ inch thick.

February 20.—"*Nardosmia palmata*, *Rubus spectabilis*, and *Trillium grandiflorum* are in flower." On the 23d I went up the Chehalis river, and to Puget Sound, which I soon after descended as far as the Straits of Fuca. There, as early as March 17, I found that the delicate little humming bird, swallows, and warblers had already reached the extreme northwest corner of the Territory, and I was disappointed in my hopes of obtaining some rare winter visitors from the north. The flowering currant, strawberries, and many other flowers were there blooming, and the winter was, of course, ended. During this winter more than twenty land and sixteen aquatic species of birds were almost constantly about the bay, some leaving only for a few days during the coldest part of January. A comparison of these numbers and species of birds with those remaining through winter in the same latitudes on the eastern coast will show very strikingly the difference in climate on the opposite sides of the continent.

FRESH WATERS OF THE TERRITORY.

Some general remarks upon the waters of the Territory, and their peculiar relations to their animal and vegetable productions, are necessary to complete these notes on the natural regions.

Taking the fresh waters first, they being, with few exceptions, branches of the Columbia, and those which are not so being small and few, I shall treat of them as if they were, knowing but few differences in their natural products. Closer examinations will, doubtless, disclose the fact that these different waters have many animals, especially small fish, peculiar to each of them, but those which are amphibious can migrate from one to another, and plants are generally extended throughout them by means of their seeds, which are transported by birds, winds, &c. I have already alluded to the fact that an extensive group of plants inhabiting marshes were of identical species with those found in similar places throughout the northern part of this continent, and even of Europe and Asia. A smaller series, more truly aquatic, presents the same fact in a remarkable manner, (*Scirpus lacustris*, *Typha latifolia*, *Polygonum amphibium*, and others.)

The low temperature of the rivers, and of the springs which form most of the marshes, accounts in great measure for this similarity in vegetation at the level of the sea, and at a height of 5,000 feet on the mountains. The original source of all these waters (except those arising in the Coast range south of the Chehalis) is in the perpetual snows of the mountains, and in their rapid course to the sea they become heated only in those few places where expanded into small lakes and sloughs. The very perfect drainage of the country prevents

the formation of extensive swamps, and no doubt accounts for the remarkable healthiness of a country exposed to such great moisture from rains. An inspection of the map will show that, especially west of the Cascade range, the rivers, though small, are exceedingly numerous. Many, too, of quite large dimensions during the rainy season, become nearly or quite dry in summer, particularly east of the Cascades. Their water is almost always exceedingly clear, though some are turbid during the summer floods, especially the Columbia and Cowlitz, which has then a bluish, milky hue.

I have seen very few that presented the dark hue arising from decomposed vegetation. One of these is the Okanagan, east of the Cascades, which, unlike all the others on that side, is dark, slow, and broad, having many lakes in its course caused by its expansion. The temperature of this river on September 27 is stated by Lieutenant Mowry as "much higher" than that of the Columbia near its mouth, which was 52°. To this fact I attribute the occurrence in it of several interesting species of mollusca, of which I had hitherto found but three species in the rivers.

Again, on the west side of the range is the *Black river*, much smaller, though apparently deeper, and perhaps conveying as much water. Around this is the most extensive swamp I have seen in the Territory, partially covered with forest, and doubtless producing many plants not to be found elsewhere. I had no opportunity of collecting anything there.

It is observable that both of these, as well as the Willamette and that part of the Columbia from the Cascade to the Coast ranges, flow nearly *parallel* instead of transverse to the mountains, and, having slow currents, are consequently deeper, warmer, and more expanded than the other streams. In June, 1853, I found the Willamette warm enough to bathe in at Portland, while the Columbia at Vancouver, then high from the summer floods, was entirely too cold. The published record of its temperature during the freshet of 1854 shows that at the commencement, on May 8, the temperature of the river at Vancouver was only 40°. It can scarcely be supposed to have been warmer previously, as the rains had not ended nor the weather become hot. From 40° it rose and fell alternately until July 20, when the record terminates, the highest temperature being, on June 30, 55°. It is somewhat singular that the *rise* in temperature corresponded with the *rise* of the water, and *vice versa* during June, which may have been due to warm rains. But as the water fell, during July, the warmth gradually increased from 47° to 53°.5, the points given for the first and twentieth of the month. It, doubtless, continued to increase afterwards during the lowest stage of the river, which is between July and December.

It is, however, hardly probable that the warmest portions of the Columbia attain a warmth much above 60°, which is allowing an increase of 8 during its course from the mouth of the Okanagan to Vancouver, while it is continually receiving branches from the mountain snows. The temperature of 52°, observed at the former point on September 27, is, doubtless, about the highest it reaches there, since that period was at the very middle of the dry season, and the snow-flood had long since ceased.

In connexion with this low temperature, and with the fact that in most winters the streams west of the mountains rarely freeze, thus limiting the temperature of the year between about 35° and 60°, we find that, though abounding in fish of many species, all those constantly *inhabiting* it belong to but two families, SALMONIDÆ and CYPRINIDÆ, excluding those which merely enter the river in summer to spawn, as the sturgeon, lamprey, &c. Reptiles and

mollusca are also rare, being confined almost exclusively to the lakes, marshes, and sloughs near the river, which become warmer in summer.

The Columbia continues fresh so near its mouth that I have found the water drinkable even at high tide, and in August, just within Cape Disappointment, less than a mile from the breakers outside the bar.

To this fact is attributable the scarcity of such animals as usually inhabit estuaries. Though I visited the place at all seasons I never found on the shores of Baker's bay but two species of mollusca, while in the bay, only a mile or two north of it, are more than twenty. But several species are known to inhabit the deep water about the bar of the Columbia, where they were dredged up by the Exploring Expedition. It is probable that the water is much salter at that depth than near the surface.

Aquatic mammalia, such as the beaver, muskrat, otter, and seal, abound in the fresh waters; and one seems to be peculiar to the Territory, the water shrew, (NEOSOREX NAVIGATOR,) caught while swimming a foot below the surface of one of the lakes at the head of the Yakima river, and at least 2,500 feet above the ocean.

SALT WATERS OF THE TERRITORY.

The salt waters of the Territory constitute a botanical and zoological region, equal in importance to the others described, and, in their great variety of animal life, far surpass the corresponding portions of the Atlantic coast. A short description of the peculiarities in the conformation of the shores will, in some degree, account for this fact. Commencing with the northwest sounds, we find there a large body of water from twenty to sixty fathoms deep, with shores almost everywhere bold and hard, so that the largest ships can literally tie fast to the trees along shore in many portions where they cannot readily anchor on account of the depth. This great body of water is nearly as salt as the ocean itself, and is renewed twice in each day by tides, which range between the limits of eighteen feet, each alternate tide being less than the preceding, until it is reduced to a rise or fall of less than a foot, when it begins to increase again, the other series decreasing in its turn. By this arrangement it happens that the extreme low tides occur about once in every fortnight.

The high mountains, and generally steep cliffs on each side, completely protect the sounds from storms, so that calms are almost constant in their inner labyrinths, and they are thus as admirably fitted for the production of animal life as the most carefully constructed aquarium. In very short visits and hasty voyages on the sounds I had little opportunity for collecting, and obtained, I believe, nothing new. But the great number of animals obtained by others, and most of which exist in abundance, show its richness in zoology, while it may be safely estimated that a third of its inhabitants are yet unknown to science.

A longer residence at Shoalwater bay allows me to speak of it more particularly. It is twenty-five miles long and from three to seven wide, thus including an area of more than a hundred square miles. Of this large surface two-thirds may be said to become bare at ordinary low tide, and probably more than three-quarters at the lowest semi-monthly ebbs, of which those of May and June are even lower than the others, though all less in their extremes than those of the sounds.

The least depth of water on the bar is, by the Coast Survey charts, three and a quarter fathoms, which increases just within it to seventeen fathoms, and varies in the channels from this depth to three fathoms at the mouths of the larger rivers. There are five rivers emptying into the bay, which bring down a large amount of fresh water, and six large creeks, which,

though wide at high water, become almost dry at medium ebb-tides, and were caused by the tides flowing through channels in the meadows originally formed by small brooks. The Willopah is navigable for about fifteen miles; the other rivers from four to twelve. There is, of course, a large mixture of fresh water with the salt in the bay, while, at the same time, the rivers are all more salt at their mouths than the Columbia, and for a proportionately much greater distance up them. The bottom of the bay is composed of sand, hard near its mouth, but becoming more and more mixed with mud towards the mouths of rivers and its south end, where it is too soft to bear a man's weight. There are several hard, sandy or gravelly points about the bay, and isolated rocks in a few places.

Such a variety of "stations" produces a corresponding variety of molluscous and other animals, which are fully spoken of elsewhere with regard to their distribution. I may remark that while all the same varieties of station occur in the sounds, and produce a corresponding series of animals, the greater depth, saltness, and more rocky bottom of those waters, favor the existence of many additional species.

The immense numbers of waterfowl that frequent this bay at almost all seasons is also referred to in my notes on them, and it will be remarked that nearly all of them are of the same species as on the Atlantic coast, though some, like the pelican, reach a much more northern latitude. The variety of fish is apparently greater than in the Columbia, though less than in the sounds. A single large starfish, occasionally washed up from deep water, is the only radiate animal I have seen there.

Gray's harbor has, apparently, much less variety of animal life than Shoalwater bay. Its bottom is more sandy, and the water probably salter than in the bay; and I have remarked that the tides flow up it for forty-five miles, though it does not taste brackish at that distance up.

The shore of the ocean, from the Columbia to Gray's harbor, which is the only part I have visited, is shallow and sandy, and produces less variety of animals than might be expected from visiting the other waters. Though I have walked the whole distance of forty miles twice, and part of it oftener, and at all seasons, I have obtained little more than I did in the bay. I also made a voyage outside, from the Columbia to Shoalwater bay, in a small schooner, being two days and two nights out, but I observed nothing not before seen.

There are several animals peculiar to the ocean, which are worthy of special reference, being more fully described in my notes on species elsewhere given.

The sea otter, inhabiting the rocky coast further north and south, is the most interesting and important, being a close link between the otters of fresh waters and the seals, of which one or more species abound along the coast, and go far up the rivers. Allied to these are the cetaceans, of which small kinds, called "humpback" and "finback" whales, are constantly to be seen at a distance of a mile or two from the shore, and are sometimes washed up on the beach, supplying a rare feast to the Indians, as well as a supply of oil to the whites. One of these, some years ago, is said to have entered Shoalwater bay, and spouted about there for several days, while the few inhabitants had no weapons to attack it with. Occasionally the large "right whale" is said to be washed ashore along this beach. Porpoises are common in summer, and enter the bays; and the species called by whalers the "killer" has been rarely washed up, one of them in the summer of 1855.

Several birds are peculiar to the ocean. The albatross and several little known auks, of singular forms, are seen out of sight of land, but never enter the bays and rarely ever approach the beach, though said to be abundant on rocky islands along other parts of the coast. At

the lofty rocky promontory of Cape Disappointment I found two or more species rarely seen within the mouth of the Columbia, though frequenting the outside of the cape in immense numbers—(PHALACROCORAX and APHRIZA.)

Of the fish peculiar to the ocean I know little, though the large skate found at the mouth of Shoalwater bay seems to be one of them. Immense numbers of small cod, and of an excellent kind of anchovy, are sometimes washed up near and within the mouth of the Columbia.

A peculiar radiate (SPATANGUS) is found along the beach, and one mollusc, only, that I have not found elsewhere, (CULTELLUS,) called there the razor clam, and considered the best of the bi-valves for the table.

The vegetation of the salt waters is almost as interesting as its animals, although, being of a low organization, it has not yet attracted so much attention.

The immense "kelp" of the Pacific, (MACROCYSTIS,) rivalling the gigantic forest trees of the coast, sometimes said to be 300 feet in length, and growing at both ends of that ocean, is a most remarkable object as it lies extended along the beach like an immense serpent, or, coiled in tangled masses, it floats about, carrying attached to its roots stones of many pounds weight. In the sound this seaweed grows plentifully, as well as in the deep sea, but not on sandy parts of the coast.

Mr. Ashmead has kindly noticed two other interesting species of Algae collected on the coast in my catalogue of plants. The plants of higher orders growing close to or in salt water illustrate the same fact in respect to distribution as those found along rivers, &c., most of them being of very wide distribution both on this continent and in other parts of the world. (*Lathyrus maritimus*, *Potentilla anserina*, *Ligusticum scoticum*, *Plantago maritima*, *Armeria vulgaris*, *Glaux maritima*, *Zostera marina*, *Ruppia maritima*, and several others.)

In regard to the temperature of the salt waters I can only say that it probably varies much less than that of the fresh, since the currents of the oceans coming from the northwest keep it cool in summer, while it never freezes, except where largely mixed with fresh water, and in shallow bays. It is well known, too, that the vast body of the North Pacific is warmer than the Atlantic in the same latitudes, and that icebergs are never seen anywhere near the coast of the Territory.

SCENERY OF THE WESTERN REGIONS.

The natural features of Washington Territory are strikingly different throughout from those of a corresponding portion of the Atlantic coast, owing both to its mountainous character and peculiar products. To a traveller approaching the coast by sea the whole country appears mountainous and densely clothed with dark green forests from the water level to the limits of perpetual snow. Far above this tower in indescribable majesty and beauty the brilliant snow-clad peaks of the Cascade range, in strong relief against the deep blue sky, and seemingly close to the sea, although Mount St. Helens, the nearest, is one hundred miles inland. At sunset the softening mist which often hangs over them becomes tinted with the most delicate hues, gradually changing through the shades of rose, purple, and lilac, until in the moonlight they become like monuments of shining silver.

On nearing land this noble scenery is found to be accompanied by a proportionately gigantic vegetation, and, indeed, everything seems planned on a gigantic scale of twice the dimensions to which we have been accustomed. The Columbia, unequalled in grandeur even by the "Father of Waters," is bordered by lofty cliffs and mountains, clothed from base to summit

with perpetual verdure, and supporting on almost every foot of surface trees of astonishing magnitude. At every bend constantly varying scenes of the wildest beauty burst upon the view, while the calm silence is often unbroken, save by the screaming of the panther or the shrill cry of the eagle soaring far overhead.

The universal and gloomy forest soon becomes monotonous, and it is a relief to see the canoe gliding silently along, the log-cabin of the pioneer on the shores, or to hear the shrill whistle of the steamboat echoing from bank to bank, and starting the savage inhabitants of the woods. Though few signs of inhabitants may be seen, there are usually a few yards back of the line of the poplars that edge the river large and fertile prairies, and farms well stocked with the products of the soil.

On the smaller rivers a striking variety in scenery is observed, as in a few miles we pass from the sandy sea-beach through luxuriant meadows, upland prairies, and forests with all their different vegetation, until reaching the end of navigation we find a mountain torrent, walled in by precipitous sides, and falling in successive cascades for hundreds of feet. All this is seen within ten miles of the ocean, on the "Copalux river," as well as on some running into Puget Sound.

Entering by the Straits of Fuca the scenery is quite different but no less interesting.

The calm blue waters of the sounds lie placid as a lake in the basin formed by their steep shores with an ever varying outline of points and bays, and dotted with islands of every form and size. Prairies are often visible to the water's edge, interspersed with evergreen forests, and extending as an elevated plateau to the base of the rugged and snowy mountains that rise like walls on the east and west.

With all this magnificence there is not wanting scenery of a milder and more home-like aspect. The smooth prairies, dotted with groves of oaks, which in the distance look like orchards, seem so much like old farms that it is hard to resist the illusion that we are in a land cultivated for hundreds of years, and adorned by the highest art, though the luxuriant and brilliant vegetation far excels any natural growth in the east. Nothing seems wanting but the presence of civilized man, though it must be acknowledged that he oftener mars than improves the lovely face of nature.

The sea-beach, too, has peculiar attractions for one accustomed to live in its vicinity. Its broad hard sand forms an excellent road, smooth and solid as the floor, on which are often to be found objects of interest and value, free gifts from the domains of Neptune. The constant roar of the surf forms a pleasant relief to the silence of the surrounding forrests, and in solemn tones unceasingly it speaks of that Power who created all these things, "whose path is in the great waters, and whose footsteps are not known."

No. 2.

CATALOGUE OF PLANTS COLLECTED EAST OF THE ROCKY MOUNTAINS.

BY PROFESSOR ASA GRAY.

PLANTS COLLECTED EAST OF THE ROCKY MOUNTAINS.

This collection was made by Dr. Suckley from the Mississippi river westward to Fort Benton, and Lieutenants Donelson and Mullan along the Missouri river from near St. Louis to Fort Union. All the plants were collected between May 10 and the end of August. This collection all belongs to one and the same region, physically and botanically—that of the plains of the northwestern portion of the great Mississippi basin. The species may, therefore, be enumerated without regard to their particular localities, which, moreover, are not always recorded in the collection. Little novelty was to be expected in a collection made in rapidly traversing a district already so repeatedly and thoroughly investigated. The species are, therefore, enumerated in the form of a classified list, such remarks or descriptive observations as are requisite being appended, as are the characters of some new plants; for this collection is found to contain three undescribed species and one new genus.

Clematis Virginiana, Linn. Vermilion river, Mo.

Pulsatilla patens, DC.

Anemone Pennsylvanica, Linn.

Anemone cylindrica, Gray.

Thalictrum cornuti, Linn.

Ranunculus divaricatus, Schrank. This is the Ranunculus aquatilis in part of Linnæus and of American authors, and R. circinatus, Sixth. It is the only species of the section Batrachium which I have seen in this country.

Ranunculus abortivus, Linn.

Ranunculus recurvatus, Poir.

Ranunculus repens, Linn.

Aquilegia Canadensis, Linn.

Delphinium tricorne, Michx.

Delphinium azureum, Michx.

Actæa rubra, Bigelow.

Menispermum Canadense, Linn.

Podophyllum peltatum, Linn.

Argemone Mexicana, Linn. *var.* albiflora.

Corydalis aurea, Willd.

Nasturtium sessiliflorum, Nutt.

Nasturtium palustre, DC.
Nasturtium obtusum, Nutt.
Nasturtium limosum, Nutt.
Arabis hirsuta, Scop.
Sisymbrium canescens, Nutt. A nearly glabrous variety.
Erysimum cheiranthoides, Linn.
Erysimum asperum, DC.
Stanleya integrifolia, James. Without much doubt this is a mere state of *S. pinnatifida.*
Stanleya pinnatifida, Nutt.
Sinapis nigra, Linn. (Introduced.)
Capsella bursa-pastoris, DC.
Lepidium Virginicum, Linn.
Lepidium intermedium, Gray, Pl. Wright.
Draba micrantha, Nutt.
Cleome integrifolia, Torr. & Gray.
Viola cucullata, Ait.
Viola palmata, Linn.
Viola Canadensis, Linn.
Elodea Virginica, Nutt.
Mœhringia lateriflora, Fenzl.
Cerastium arvense, Linn.
Cerastium mutans, Raf.
Malvastrum coccineum, Gray. One hundred miles above Fort Pierre.
Linum perenne, Linn.
Linum rigidum, Pursh.
Geranium maculatum, Linn.
Oxalis violacea, Linn.
Oxalis corniculata, Linn.
Zanthoxylum Americanum, Mill.
Rhus toxicodendron, Linn.
Rhus aromatica, Ait. White river, Nebraska.
Ampelopsis quinquefolia, Michx.
Ceanothus ovalis, Bigel., *var.*
Staphylea trifolia, Linn.
Negundo aceroides, Mœnch.
Polygala alba, Nutt.
Vicia Americana, Muhl.
Lathyrus linearis, Nutt.
Lathyrus polymorphus, Nutt.
Lathyrus venosus, Muhl.
Amphicarpa monoica, Ell.
Glycirrhiza lepidota, Nutt.
Psoralea lanceolata, Pursh.
Psoralea argophylla, Pursh, and *var.* decumbens. Less silvery and silky-hirsute; stems slender, decumbent or diffuse; stipules mostly near equalling the short petiole; leaflets ellip-

tical or narrowly oblong, (1–1½ inch long, ⅓–½ inch wide,) some glabrate above, flowers smaller. Little Muddy river, August 10. This is perhaps the *P. campestris*, Nutt., which I have never seen; but the leaves of that species are said to be only one or two lines broad. Fruiting specimens are desirable.

Psoralea cuspidata, Pursh.

Psoralea esculenta, Pursh.

Amorpha fruticosa, Linn.

Amorpha nana, Nutt., (*microphylla*, Pursh.)

Amorpha canescens, Nutt.

Petalostemon violaceum, Michx.

Petalostemon candidum, Michx.

Trifolium stoloniferum, Muhl.

Trifolium pratense, Linn.

Trifolium repens, Linn.

Hosackia Purshiana, Benth.

Astragalus caryocarpus, Ker.

Astragalus gracilis, Nutt.

Astragalus Missouriensis, Nutt.

Astragalus adsurgens, Pall., *var.* robustior, Hook. *Astragalus striatus*, Nutt. in Torr. and Gray, Fl. 1, p. 230. Apparently very abundant on the Upper Missouri, the specimens in flower only; fruit not seen. This is evidently only a larger form of Hooker's *A. adsurgens*, which seems to be that of Pallas also. The lower stipules cohere more or less opposite the petiole, but the upper ones are distinct.

Astragalus Canadensis, Linn.? in flower only.

Astragalus racemosus, Pursh.

Astragalus bisulcatus, Gray. (Plate I.) *Phaca bisulcata*, Hook. Fl. Bor.-Am., 1, p. 145. Specimens with mature fruit, of which I give a figure.

Astragalus pectinatus, Dougl. *Phaca pectinata*, Hook., l. c. 54. The ripe fruit is much blunter and thicker than in Hooker's figure.

Astragalus filifolius, (Plate I.) *Phaca longifolia*, Nutt.; *Psoralea longifolia*, Pursh. The name *longifolius* being preoccupied in Astragalus, this may take the more characteristic name of *A. filifolius*.

Oxytropis Lamberti, Pursh. Various forms, doubtless including more than one of Nuttall's species.

Oxytropis splendens, Dougl. A most elegant plant, with its crowded silvery silky-villous foliage and spikes, and deep blue corollas. It was gathered on the Chippewa river.

Desmodium nudiflorum, DC.

Lespedeza hirta, Ell.

Lupinus pusillus, Pursh.

Lupinus perennis, Linn.

Sophora sericea, Nutt.

Thermopsis rhombifolia, Nutt.

Gleditschia triacanthos, Linn.

Schrankia uncinata, Willd.

Cerasus Virginiana, DC.

MUSEUM OF PARIS

Geum Virginianum, Linn.
Geum strictum, Ait.
Geum triflorum, Pursh.
Sanguisorba annua, Nutt.
Chamærhodos erecta.
Potentilla Norvegica, Linn.
Potentilla paradoxa, Nutt.
Potentilla Pennsylvanica, Linn.
Potentilla Canadensis, Linn.
Potentilla anserina, Linn.
Potentilla arguta, Pursh.
Fragaria vesca, Linn.
Rubus strigosus, Michx.
Rubus villosus, Ait.
Rosa blanda, Ait.; Fort Clark, Neb.
Cratægus coccinea; Fort Union, Neb.
Ammania latifolia, Linn.
Œnothera biennis, Linn.
Œnothera albicaulis, Nutt.
Œnothera coronopifolia, Torr. & Gray.
Œnothera cæspitosa, Nutt.
Œnothera serrulata, Nutt.
Gaura coccinea, Nutt.
Circæa lutetiana, Linn.
Menzelia (Bartonia) ornata, Torr. & Gray.
Echinocystis lobata, Torr. & Gray.
Ribes hirtellum, Michx.; fifty miles above Fort Union, Neb.
Ribes rotundifolium, Michx.
Ribes floridum, L'Her.; near Fort Union, Neb.
Ribes aureum, Pursh.; one hundred miles above Fort Pierre, Neb.
Opuntia Missouriensis, DC.
Heuchera Richardsonii, R. Br.
Sanicula Marylandica, Linn.
Osmorrhiza longistylis, DC.
Cymopterus glomeratus, DC.

Musenium divaricatum, Nutt. (Plate II.) The specimens in this collection, from various localities, all have smooth ovaries and fruit, and therefore belong to the typical form of the species. We give a figure to illustrate the plant. The variety *Hookeri*, Torr. & Gray, *M. Hookeri*, Nutt. ined., and Nuttall's *M. trachyspermum* and *M. angustifolium* appear to be all one species, having shorter as well as scabrous fruit, and probably distinct from *M. divaricatum;* but my present means of comparison do not suffice for determining this point. The number of the vittæ, whether one or more in each interval, rarely affords valid characters; and *Musenium* will probably be merged in *Tauschia;* but this question should perhaps be deferred to a general recension of umbelliferous genera, which is greatly needed. The leaves of *M. divaricatum* are not all opposite, the uppermost being usually alternate.

ARALIA NUDICAULIS, Linn.

CORNUS SERICEA, Linn.; Fort Clark, Neb.

CORNUS STOLONIFERA, Michx.; Fort Clark, "Kinnickinnick."

SYMPHORICARPUS OCCIDENTALIS, R. Br.

SYMPHORICARPUS VULGARIS, Michx.

GALIUM APARINE, Linn.

GALIUM TRIFIDUM, Linn.

GALIUM TRIFLORUM, Michx.

GALIUM BOREALE, Linn.

LIATRIS PUNCTATA, Hook.

EUPATORIUM PERFOLIATUM, Linn.

KUHNIA EUPATORIOIDES, Linn.; broad-leaved variety.

ASTER SERICEUS, Vent.

ASTER MULTIFLORUS, Ait.

ERIGERON PUMILUM, Nutt.

ERIGERON CÆSPITOSUM, Nutt.; *var.* radiis flavidis. This is exactly Nuttall's *Erigeron cæspitosum*, or its *var. grandiflorum*, except that the rays are light yellow in the dried specimens; so decidedly so that one can hardly suppose them to have been pure white when living; yet this is possibly the case.

ERIGERON PHILADELPHICUM, Linn.

ERIGERON CANADENSE, Linn.

SOLIDAGO RIGIDA, Linn.

SOLIDAGO INCANA, Torr. & Gray.

SOLIDAGO MISSOURIENSIS, Nutt.

SOLIDAGO GIGANTEA, Ait.

APLOPAPPUS SPINULOSUS, DC.

APLOPAPPUS LANCEOLATUS, Torr. & Gray.

GRINDELIA SQUARROSA, Duval.

CHRYSOPSIS VILLOSA, Nutt.

SILPHIUM LACINIATUM, Linn.

SILPHIUM PERFOLIATUM, Linn.

EUPHROSYNE XANTHIFOLIA, Gray.

IVA AXILLARIS, Pursh.

AMBROSIA CORONOPIFOLIA, Torr. & Gray.

AMBROSIA TRIFIDA, Linn., and *var.* INTEGRIFOLIA.

XANTHIUM ECHINATUM, Murr.

HELIOPSIS LÆVIS, *var.* SCABRA, Torr. & Gray.

ECHINACEA PURPUREA, Mœnch.

ECHINACEA ANGUSTIFOLIA, DC.

LEPACHYS COLUMNARIS, Torr. & Gray, and varieties.

HELIANTHUS PETIOLARIS, Nutt. A diminutive state of this species, common in the collect is perhaps the *H. pumilus* of Nuttall.

HELIANTHUS RIGIDUS, Desp.

HELIANTHUS MAXIMILIANI, Schrœder.

HELIANTHUS STRUMOSUS, Linn.

Gaillardia pulchella, Foug.
Hymenopappus tenuifolius, Pursh.
Actinella acaulis, Nutt.
Achillea Millefolium, Linn.
Artemisia dracunculoides, Pursh.
Artemisia Canadensis, Michx.
Artemisia cana, Pursh.
Artemisia ludoviciana, Nutt.
Artemisia biennis, Willd.
Artemisia frigidda, Willd.
Antennaria plantaginifolia, Hook.
Senecio aureus, Linn., and vars.
Senecio lobatus, Pers.
Cirsium undulatum, Spreng.
Cirsium Hookerianum, Torr. & Gray. var. Leaves mostly pinnately-parted, the segments lanceolate or linear, sparingly spinulose-toothed.—L'Eau qui Court. (Flowers apparently ochroleucous.)
Cirsium Drummondi, Torr. & Gray. Only the heads, with their naked peduncles, were gathered, so that the species is scarcely determinable.
Lygodesmia juncea, Don.
Troximon cuspidatum, Nutt.
Troximon glaucum, Nutt.
Mulgedium pulchellum, Nutt.
Lobelia spicata, Lam.
Specularia perfoliata, DC.
Campanula rotundifolia, Linn.
Campanula linifolia, Lam.
Plantago major, Linn.
Plantago Virginica, Linn.
Plantago gnaphalioides, Nutt.
Lysimachia ciliata, Linn.
Aphyllon fasciculatum, Torr. & Gray. The name "*P. glabra,*" of Pursh, is a little subsequent in date to Nuttall's *P. erianthera;* but the latter can hardly be said to be characterized in Fraser's catalogue, and the name is badly chosen, the anthe's being very slightly hairy, that Pursh's name may properly enough be preferred. This very handsome species has recently been found by Hooker under the name of *P. Gordonianus.* This genus (Anoplon, Waller, or Anoplavthus, Endlicher, but long ago called Aphyllon by Mitchell) will perhaps be merged in Phelypæa, Towrn.
Pentstemon grandiflorus, Nutt.
Pentstemon glaber, Pursh.
Pentstemon gracilis, Nutt.
Pentstemon albidus, Nutt.
Veronica peregrina, Linn.
Castilleja sessiliflora, Pursh.
Verbena Aubletia, Pursh.

Lycopus sinuatus, Ell.

Mentha Canadensis, Linn.

Hedeoma hispida, Pursh.

Monarda fistulosa, Linn.

Blephilia ciliata, Raf.

Lophanthus anisatus, Benth.

Scutellaria parvula, Michx.

Stachys sylvatica, Linn.

Teucrium Canadense, Linn.

Onosmodium molle, Michx. In this, as I have observed in the too closely allied genus Macromeria, there is, if I mistake not, a dimorphism of the flowers, affecting the form and length of the corolla and filaments.

Lithospermum canescens, Lehm.

Lithospermum angustifolium, Michx.

Pentalophus longiflorus, A. DC.

Echinospermum patulum, Lehm.

Echinospermum (Lappula) Fremontii, Torr. (n. sp.): "Stem erect, branching above; leaves oblong-lanceolate, clothed with stiff, incumbent hairs; fructiferous pedicels erect; disk of the nutlets flattish, tuberculate; prickles in a double series, slender, the interior ones longer than the diameter of the nutlets—differs from E. patulum in its double row of prickles, and considerable larger fruit: from E. Lappula in the much longer prickles and flattish disk, which often has a number of small prickles along the axis. Colonel Frémont collected this plant in his second journey (1844) on Pass creek, near the southern extremity of the Sierra Nevada."—*Torrey.*

Cynoglossum Morisoni, DC.

Ellisia Nyctelea, Linn.

Hydrophyllum Virginicum, Linn.

Hydrophyllum appendiculatum, Michx.

Collomia linearis, Nutt.

Phlox divaricata, Linn.

Phlox pilosa, Linn.

Phlox aristata, Michx.

Phlox Hoodii, Richards.

Calystegia Sepium, R. Br.

Physalis hirsuta, Dunal.

Apocynum cannabinum, Linn.

Apocynum androsaemifolium, Linn.

Acerates viridiflora, Ell.

Asclepias speciosa, Torr. (*A. Douglassii*, Hook.)

Asclepias nivea, Linn.

Fraxinus viridis, Michx.

Asarum Canadense, Linn.

Oxybaphus nyctagineus, Sweet.

Atriplex hastata, *var.* (*Chenopodium subspicatum*, Nutt.)

Herline & Bonsel, Lith. Philad.

ENDOLEPIS SUCKLEYI

"ENDOLEPIS, N. Gen.

"Flowers monœcious; the male ebracteate, in glomerate terminal spikes; the female solitary and sessile in the axils of the leaves. *Masc.* Calyx gamosepalous, urceolate, five-lobed; the lobes thin, triangular—subulate strongly inflexed, each with a fleshy, protuberant gibbosity at its base outside. Stamens five; filaments subulate, short; anthers oblong, large, scarcely exserted. No rudiment of an ovary. *Fem.* bibracteate; the bracts ovate, membranaceous, inappendiculate, united to the summit, forming a compressed theca which incloses the flower. Calyx of three distinct sepals. No stamens nor staminodia. Ovary ovate; styles two, distinct, filiform, slightly exserted; ovate erect. Utricle ovate, compressed, enclosed in the membranaceous theca. Seed ovate, rostellate at the summit, vertical, embryo nearly annular, very slender; radicle superior. An annual low herb, in aspect resembling Chenopodium or Atriplex, with lanceolate acute, entire leaves.

"ENDELOPIS SUCKLEYI, n. sp. [Plate III.] As a genus this is characterized among *Atriplices* both by the remarkable calyx of the staminate flowers, and by the presence of a manifest three-sepalous calyx in the fertile flowers. The species is dedicated to my former pupil, the discoverer."—TORREY.

OBIONE CANESCENS, Moquin.

OBIONE ARGENTEA, Moquin?

OBIONE SUCKLEYANA, Torr., n. sp. (Plate IV.) "Annual, stem branching, prostrate; leaves suborbicular on long petioles, acutely repand-dentate, pale-green both sides, nearly glabrous; glomerules axillary, monœcious bracts of the sessile fruit deltoid, united to the summit, the margin narrowly winged, crenate-denticulate. Very distinct from every other North American species of Obione, but having some resemblance to O. argentea. It is remarkable for the roundish leaves, very long petioles, and the large and much compressed nearly glabrous fruit. The male flowers were tetramerous."—TORREY. This was collected in the Milk River valley, August 19.

EUROTIA LANATA, Moq.

ERIOGONUM FLAVUM, Nutt.

POLYGONUM AVICULARE, Linn.

POLYGONUM RAMOSSISSIMUM, Michx.

POLYGONUM VIRGINIANUM, Linn.

POLYGONUM AMPHIBIUM, Linn.

RUMEX VENOSUS, Pursh.

RUMEX CRISPUS, Linn.

RUMEX PERSICARIOIDES, Linn.

RUMEX SALICIFOLILIA, Weinm.

SHEPHERDIA ARGENTEA, Nutt. Yellowstone river, Nebraska.

COMANDRA UMBELLATA, Nutt.

EUPHORBIA MARGINATA, Pursh.

EUPHORBIA PLATYPHYLLA, Linn.

URTICA DIOICA, Linn.

PILEA PUMILA, Gray.

MORUS RUBRA, Linn. Vermillion river, Mo.

POPULUS MONILIFERA, Ait.

Salix angustata, Pursh. Near Fort Union, Nebraska.

Juniperus Virginiana, Linn.

Arum triphyllum, Linn.

Alisma Plantago, Linn.

Sagittaria variabilis, Engelm.

Cypripedium pubescens, Ait.

Iris versicolor, Linn.

Sisyrinchium anceps, Linn.

Smilax herbacea, Linn.

Polygonatum giganteum, Dietrich. *P. canaliculatum;* but the name is a bad one. The species is, I think, distinct from *P. multiflorum* of Europe.

Smilacina stellata, Desf.

Smilacina racemosa, Desf.

Allium Canadense, Linn.

Allium reticulatum, Nutt.

Yucca angustifolia, Nutt.

Lilium Philadelphicum, Linn.

Lilium Canadense, Linn.

Calochortus elegans, Pursh.

Uvularia grandiflora, Smith.

Zygadenus glaucus, Nutt.

Juncus tenuis, Willd.

Tradescantia Virginica, Linn.

Carex rosea, Schk.

Carex Muhlenbergii, Schk.

Carex straminea, Schk.

Carex cristata, Schw.

Carex stricta, Lam.

Carex filiformis, Linn.

Carex Shortiana, Dewey.

Carex Davisii, Schw. & Torr.

Carex grisea, Wahl.

Carex anceps, Willd.

Carex aristata, R. Br.

Phalaris arundinacea, Linn.

Calamagrostis canadensis, Beauv.

Calamagrostis longifolia, Hook.

Stipa sparta, Linn.

Stipa capillata, Linn.

Vilfa cuspidata, Torr.

Spartina cynosuroides, Willd.

Bouteloua oligostachya, *(Atheropogon; Nutt.)*

Sesleria dactyloides, Nutt.

Festuca tenella, Willd.

Koeleria cristata, Linn.

CUCUMIS STOCKLEYANA

Reboulea Pennsylvanica, Gray.
Poa pratensis, Linn.
Poa crocata, Michx.
Triticum repens, Linn.
Elymus canadensis, Linn.
Hordeum pusillum, Nutt.
Hordeum jubatum, Ait.
Panicum clandestinum, Linn.
Panicum xanthophysum, Gray.
Andropogon scoparius, Michx.
Equisetum hyemale, Linn.
Cistopteris fragilis, Bernh.
Woodsia obtusa, Torr.
Asplenium angustifolium, Pursh.
Adiantum pedatum, Linn.
Botrychium Virginicum, Swartz.

No. 3.

CATALOGUE OF PLANTS COLLECTED IN WASHINGTON TERRITORY.

BY J. G. COOPER, M. D.

PLANTS COLLECTED IN WASHINGTON TERRITORY.

NOTE.—In order to show the marked dissimilarity in the Floras of the opposite sides of the Cascade range, I have made separate lists of the plants collected by me in the two regions.

Though that from the east side (including a few from the summit of the range) presents a comparatively small number of plants, still it seems to indicate something of the striking distinctions referred to, those from the west having been collected during two seasons, and being a comparatively complete list of the most characteristic plants. Most of the plants common to both regions are inhabitants of the prairies, and it is but just to mention that many of such as inhabit the western prairies have been found by other collectors in those east of the range, though at an earlier season than I visited them. I have made some notes on the distribution of these in the chapter on the trees, &c.

The whole of the first collection was examined and named by Professor Gray. Most of those of the latter collections were also named by him or Professor Torrey, who, as well as Mr. G. Thurber, have kindly assisted me in their determination. I have marked such species with the initials G. and T., where the authority rests on Professors Gray and Torrey.

I am also indebted to Mr. Gibbs for much assistance in collecting, and to Miss E. Lincoln, of Astoria, Oregon Territory, for a very well prepared collection of plants from the vicinity of Cape Disappointment, Washington Territory, containing several species which I did not myself obtain.

The four hundred or more species enumerated does not include probably more than a third of the plants of the Territory, and in the little known alpine regions of the several mountain ranges much novelty doubtless remains for the botanist.

I limited my notes on plants to such additions or corrections as I could make to the already very complete descriptions contained in Torrey and Gray's Flora of North America; in Hooker's Flora Boreali-Americana, and the other works cited in the lists. The localities, range within the Territory, and notes of size, colors, &c., are, however, always given as far as known to me. In some instances the only specimens of species collected were the seed and their envelopes.

PLANTS COLLECTED FROM THE SUMMIT OF THE CASCADE MOUNTAINS, EASTWARD TO THE UPPER COLUMBIA RIVER, AND NORTHWARD TO THE FORTY-NINTH DEGREE OF LATITUDE, BETWEEN JULY AND SEPTEMBER, 1853.

RANUNCULUS ALISMAEFOLIUS, Geyer, var? In a marsh not far southeast of Mount Adams; August 12; rare.

DELPHINUM SIMPLEX, Dougl. Common in prairies; from Vancouver eastward; August 12.

ACONITUM COLUMBIANUM, Nutt. (*A. nasutum, Fischer.*) Two varieties found on borders of mountain streams on eastern slope of Cascade range; August 13; rare, 4 feet high, flowers deep blue.

NASTURTIUM LYRATUM, Nutt. Along banks of Columbia river, near the Dalles; November; common.

CLEOME LUTEA, Hooker. South bank of Columbia, from Walla-Walla to the Dalles; not seen northward; November 8 to 15.

SPRAGUEA UMBELLATA, Torr. High on Cascade mountains, east of Mount Adams; August. A single depauperate specimen. "It was known only from the base of the Sierra Nevada in Upper California, where Frémont gathered the specimens described and figured by Dr. Torrey in his Plantae Frémontianae."—GRAY.

SIDALCEA MALVAEFLORA, Gray. Small form. (*S. Oregona*, Nutt., in Fl. of N. A.) Common along both sides from the height of 4,000 feet downward; August 12; 2 feet, purple.

MALVASTRUM MUNROANUM, Gray. Near mouth of Okanagan river; October 4. Second flowering on land lately burnt over; orange red. "*M. Thurberi*, GRAY, (Plantae Thurberianae,) is the same as this, or at least is the *M. fasciculata*, Nutt., which has been referred to *M. Munroana*."—GRAY.

ERODIUM CICUTARIUM, L'Her. Common along streams on the higher parts of the range east of the summit; August.

GERANIUM INCISUM, Nutt. Not very common at the same time and place. Two feet high, flowers pale purple.

ACER GLABRUM, Torr. (*A. Douglassii, Hook.*) Not abundant. On the mountains east of the summit only; fruit nearly ripe in August; a small tree.

VICIA AMERICANA, Muhl. (*V. Oregana, Nutt.*) Common in damp places.

LATHYRUS PALUSTRIS, Linn. *var.* Several varieties common with the preceding, but in damper soil.

HOSACKIA PURSHIANA, Benth. and varieties. Common, but out of flower except in shady and damp spots.

ASTRAGALUS (HOMALOBUS) SEROTINUS, *n. sp.*, Pl. V. Near the Columbia river, about latitude 48°. Rare; probably a second growth on burnt ground; October.

"*Description.*—Cinereous, with a minute strigulose pubescence; stems branching from the perennial root, ascending, slender, angled, often flexuous, (8–15 inches high;) stipules triangular-acuminate, more or less united opposite the petiole; leaflets 9–21, linear (rarely oblong-linear or oblanceolate) mucronate, not rigid, glabrous, or nearly so above, the terminal one resembling the others; peduncles exceeding the leaves; racemes loosely many-flowered, virgate; bracts

much shorter than the at length spreading or recurved pedicels; calyx campanulate, minutely pubescent, its teeth very short; corolla purple; the legume sessile in the calyx, linear, acute, glabrous, or minutely puberulent, 8–10 seeded; the narrow valves considerably convex. Two forms occur, one rather smaller and more cinereous than the other. Leaflets half an inch to one inch long, varying from half a line to two lines wide. Corolla four or four and a half lines long. Legume nine or ten lines long, a line and a half wide; neither suture in the least introflexed or tumid; the funiculi short. To none of Nuttall's too numerous species of Homalobus can this be referred. It most resembles his *H. decumbens*, but is less rigid, not silky-canescent, and has very much shorter and blunter calyx-teeth. It may possibly be the obscure *Astragalus miser* of Douglas, but the pubescence of the calyx is seldom and slightly blackish."—GRAY.

LUPINUS SERICEUS, Pursh. Common on higher parts of eastern slopes in the pine forest, growing three feet high, and in August nearly past flowering.

L. LEUCOPHYLLUS, Lindl. In similar localities. A very beautiful plant three feet high, with long spikes of blue flowers.

SPIREA BETULAEFOLIA, Pallas. Collected near 49th° on the Okanagan river flowering a second time in October. Seen also on summit of range in July; 3 feet high.

POTENTILLA GRACILIS, Dougl. Abundant on the prairies mostly east of the range.

EPILOBIUM PANICULATUM, Nutt. Common along streams; August; 4 feet high.

OENOTHERA ALBICAULIS, Nutt. A single specimen found in flower along the Okanagan river, in October, on ground lately burnt over.

MENTZELIA (BARTONIA) LAEVICAULIS, Torr & Gray. Found in flower on the plains from the Wenass river north, to the 49th°; August; 2 feet; yellow.

GALIUM RUBIOIDES, Linn. Common in damp soil, flowering in August.

BRICKELLIA OBLONGIFOLIA, Nutt. Common on branches of the Columbia; flowering August 20. Odor peculiar and not unpleasant.

MACHAERANTHERA CANESCENS, Gray, *var.* (*Dieteria divaricata, Nutt.*) Common on gravelly shores of the Yakima, and other rivers; flowering in August.

ASTER SALSUGINOSUS, Rich, *var.* Rare on banks of Yakima river. Flowering in September; a foot high; flowers purple.

A. MULTIFLORUS, Willd. Two varieties collected on the plains in October. Two feet high; flowers white.

ERIGERON DOUGLASSII, *var? eradiatum.* Sandy pine forest on the table-land, east of Mount Adams; August. "As far as can be judged from the poor specimens, this accords pretty well with *E. Douglassii*, TORR. & GRAY; except that the heads are rayless." GRAY.

SOLIDAGO GIGANTEA, Aiton. Common along streams on east side, growing 6 feet high.

LINOSYRIS ALBICAULIS, Torr. & Gray. Near Yakima and its branches, flowering in September, when this and a few other compostiæ were the only plants showing signs of life; 5 feet high and very ornamental.

L. VISCIDIFLORA, Hook. Found common along Snake river in November, but not seen northward. Accords with *L. viscidiflora*, except that the flowers in these specimens were not viscid. A large shrub much less beautiful than the last.

GRINDELIA DISCOIDEA, Nutt. Banks of the Columbia near latitude 48°; flowering in September a foot high. "Not the species so called by Hooker and Annot; which is *G. anomala*, D.C. This specimen has heads as large as those of *G. squarrosa*, from which, except in the want of

rays, it is hardly distinguishable. Indeed, this and *G. nana.* Nutt. (wrongly joined to *G. humilis*, Hook. & Arn.) are probably to be referred to *G. squarrosa.*" GRAY.

CHRYSOPSIS VILLOSA, Nutt. Yakima valley, August 15.

XANTHIUM STRUMARIUM, *var. Canadense*, Torr. & Gray. Yakima valley, August 20; common, 2 feet high.

HELIANTHUS LENTICULARIS, Dougl. Banks of Columbia near latitude 48°; September 20. Common; growing 6 feet high.

GAILLARDIA ARISTATA, Pursh. Abundant on prairies from Vancouver eastward; June to October.

HELENIUM AUTUMNALE, Linn. Collected in flower on southern banks of the Columbia; November, common.

ARTEMISIA CANADENSIS, Michx. Common on the upper Columbia and its branches; collected in flower about September 1.

A. DRACUNCULOIDES, Pursh. Noticed only on sandy hills near mouth of the Okanagan river; October 3, in flower.

A. TRIDENTATA, Nutt. A shrub 3 to 7 feet in height, with stems six inches in diameter at the base. Commonly called "Wild Sage," but with more of the flavor of turpentine, combined with intense bitterness, which it imparts to the flesh of the "Sagefowl" feeding on its leaves, as well as to meat laid on it for a short time. Common on the sandy plains of the interior, commencing to flower in October.

A. TRIFIDA, Nutt. In general appearance and leaves much resembles the last, but is only 2 to 3 feet high, and not strongly scented. The top appears to be herbaceous. Seen only on the Okanagan river, in flower, October 3.

A. DOUGLASIANA, Nutt. Common in the valley of the Yakima river. Herbaceous, 2-3 feet high, flowering August 20.

A. LUDOVICIANA, Nutt. In valleys near the Columbia. September 18.

A. FRIGIDA, Willd. Met with only on the upper part of the Okanagan river, near latitude 49°; in flowers October 9.

ARNICA CHAMISSONIS, Less. In flower on southern bank of the Columbia, near the Dalles, November 10.

MALACOTHRIX CREPOIDES, (n. sp.;) "glabrous, subcaulescent; stems numerous from an apparently perennial root, slender, diffuse, (a span or more in length,) sparingly dichotomously paniculate, the slender naked branches or peduncles bearing single heads; leaves mostly radical, lanceolate, runcinate pinnatifid, tapering into a petiole, the few cauline sessile by a hastate or auriculate base, mostly small and bract-like; involucre somewhat pubescent, of lanceolate, subulate scales, with a few setaceous calyculate bracts; achenia somewhat contracted at both ends, strongly ribbed, the coroniform border obsolete; bristles of the pappus consimilar and equally deciduous. Radical leaves thin, 3 or 4 inches long including the short and margined petiole. Stems or scapes weak, sometimes sparsely hairy at the base, not much surpassing the leaves. Heads not larger than those of M. obtusa, *Benth.* Involucre 3 lines long. Flowers yellow. Achenia a line long, fusiform-oblong, being somewhat contracted at the base and apex, the terminal areola therefore smaller than the greatest diameter of the achenium. Pappus of very soft and fine bristles, which are barbellulate at the base and early deciduous, with no stronger and more persistent ones intermixed." GRAY.

Collected near the Columbia river about latitude 48° in September.

MULGEDIUM PULCHELLUM. Nutt. In Yakima valley, flowering August 20; common.

CAMPANULA LINIFOLIA, Lam. Collected near summit of Cascade range, but common in prairies from Vancouver eastward.

PYROLA DENTATA, Smith, *var. integra.* On high wooded hills, east of Mount Adams; August 12th; in fruit. "This is just the Pyrola dentata figured by Hooker, only that the oblong obovate leaves are entire, or, at most, with mere vestiges of a few teeth, in some cases."—*Gray.*

PHELIPŒA CARNOSA, Torr. & Gray, *ined.* Tahk prairie, ten miles from base of Mount Adams; August 12. Corolla pale purple.

"This, the *Orobanche carnosa*, Hook., is certainly a *Phelipœa*, and a close congener of *P. Californica* and *Ludoviciana;* but it invalidates the character of Aphyllon *(Anoplanthus, Endl.)* as to the bracts, rendering it probable that this genus may be merged in Phelipœa, since some species of the latter have a nearly regular corolla. These specimens, as to the corolla, correspond better with Hooker's character than with his figure; indeed, the three lower lobes are not even emarginate. The notch of the upper lip varies in depth, as it does in the allied species."—*Gray.*

PENTSTEMON PROCERUS, Dougl. Common along the banks of the Yakima and its branches; flowring in August, purple; a foot high.

P. RICHARDSONII, Dougl. On the higher parts of the Cascade range eastward; August; purple.

MIMULUS LUTEUS, Linn. Common along the banks of streams.

MIMULUS MOSCHATUS, Dougl. Collected, August 9, on a branch of the Yakima river, but also found in damp shady places on both sides of the mountains.

M. PRIMULOIDES, Benth. Found only, August 12, on the higher part of the Cascade range; yellow.

ORTHOCARPUS BRACTEOSUS, Benth. On the low prairie near the Yakima. August; flower purple.

CASTILLEJA MINIATA, Dougl. On the bank of the Columbia, about latitude 48°. Flowering a second time September 20.

MENTHA BOREALIS, Linn. Common on the Yakima and branches, as well as west of the Cascade range. August.

STACHYS CILIATA, Dougl. With the preceding and more common.

PHLOX SPECIOSA, Pursh. Collected in October on burned prairies, along the Okanagan, flowering a second time. Also found in flower near the Dalles, in November. Six inches high.

COLLOMIA LINEARIS, Nutt. Not uncommon on prairies of the Yakima in July, but mostly out of flower.

GILIA PULCHELLA, Dougl. Common on eastern side of Cascade mountains, but rarely found in flower after June.

G. INCONSPICUA, Dougl. With the preceding, and also westward.

POLEMONIUM PULCHERRIMUM, Hook. Found only near the 49th degree, near banks of streams, in gravelly soil, a few plants having a second growth of flowers on them.

APOCYNUM ANDROSAEMIFOLIUM, Linn. Common east of Cascade range, and also along the Columbia to Vancouver, more rarely.

ASCLEPIAS SPECIOSA, Torr. Found flowering in Yakima valley in August. Plant 4 feet high, flowers yellowish white.

ABRONIA MELLIFERA, Dougl. Collected in flower on the sandy desert south of the Columbia, near Walla-Walla, and noticed nowhere else. November 12; flowers white.

ERIOGONUM NIVEUM, Dougl. Found abundantly near the Columbia, about latitude 48°, growing in dry soil on hill-sides, which looked as if covered with buckwheat in flower. A pretty species a foot high; flowers large, white; September 22.

E. MICROTHECUM, Nutt. Common in the Yakima valley, flowering in August. Flowers small, and very caducous; not ornamental.

E. HERACLEOIDES, Nutt. On the wet, stony shore of the Columbia, about latitude 48°. Second flowering; stems two feet high, woody; flowers pale yellow, large. September 25.

E. NUDUM, Dougl. A common species on the higher slopes east of the mountains. Stems four feet high, naked; leaves mostly radical and large, nearly all faded; flowers white, with purple veins. August 12.

EUPHORBIA MACULATA, Linn. Collected, apparently indigenous, and of very large size, on the sandy desert south of the Columbia. November 8.

SPIRANTHES CERNUA, Richardson. Abundant on damp prairies on top of the Cascade range, and westward. August 10.

CALOCHORTUS ELEGANS, Pursh. A single specimen only, found under pines on the top of the Cascades. August 8.

C. MACROCARPUS, Dougl. Common in flower in the pine forest east of Mount Adams, growing two feet high; the flowers single, but very large, and rich purple. August 12.

PLANTS COLLECTED WEST OF THE CASCADE MOUNTAINS DURING 1854–'55.

NOTE.—S. or G. indicates that Dr. Suckley or Mr. Gibbs collected the plant or the information as to its range and uses. Twelve species, included in brackets, were collected only by Dr. Suckley at Fort Steilacoom.

RANUNCULUS AQUATILIS, Linn.; var. *heterophyllus*, T. &. G., (T.;) on mud prairie, near Steilacoom; June 1, rare.

R. REPTANS, Linn., (G.;) wet grounds near Puget Sound and coast.

R. OCCIDENTALIS, Nutt., (G.;) dry prairies about Puget Sound, common; March 28 to June, 2 feet high.

R. RECURVATUS, Poir.; spring on Whidby's I.; April 20, rare.

R. ORTHORHYNCHUS, Hook.; wet grounds in shade, near Steilacoom.

[R. TENELLUS, ? Nutt., (G.;) Steilacoom, S.]

AQUILEGIA CANADENSIS, (Linn.;) *var. formosa*, Fischer. Common everywhere on dry prairies to elevation of 4,000 feet; April to August. [Steilacoom, S.] "Root edible," G.

DELPHINIUM MENZIESII, (D. C.;) Whidby's I.; April 20, 1 foot, rare; a large form, flowers deep blue.

D. AZUREUM, (Mich.) Common in prairies near Columbia river and eastward.

ACTÆA ARGUTA, (Nutt.) Common in fir forests, Vancouver to Olympia; 4 feet high. Flowers in May, white; fruit ripe in July, both red and white on different plants.

BERBERIS AQUIFOLIUM, (Pursh.) Abundant in fir forests and across Cascade mountains eastward, not west of Coast mountains; flowers in March, fruit ripe in July; called "Oregon grape;" eatable when cooked. Fort Steilacoom, (S.)

B. NERVOSA, (Pursh.) With the preceding, west of Cascade mountains, (only?) flowering at the same time; the flowers only differing in their larger size. Both are similarly fragrant; stems creeping beneath the surface, the ends only rising a few inches.

ACHLYS TRIPHYLLA, (DC.) Vancouver to Olympia, in fir forests. Flowers May 1, common, "A decoction of the root used for pains in the breast." (G.)

NUPHAR ADVENA, (Aiton.) Ponds on mountains and near coast, April.

CHRYSEIS CALIFORNICA, (Hkr. & Arnott.) Garden near Steilacoom. Introduced? Agrees nearer with this than *C. Douglassii*, which I did not meet with in the Territory. Flowers 3 inches wide, orange; June.

DIELYTRA FORMOSA, DC. (G.) Common in rich grounds; Cascades to coast. April to July.

CORYDALIS SCOULERI, Hkr., (C.) Rocky edges of brooks in mountain forests, 3 feet; June 15.

NASTURTIUM CURVISILIQUA, Nutt., (T.) Steilacoom; common in wet grounds on prairie, 2 feet high; June.

N. PALUSTRE, DC. Marshes along coast, common; June.

BARBAREA VULGARIS, B. Bix., (G.) Abundant in damp meadows, everywhere to coast; May.

ARABIS HIRSUTA, Seeys., (T. & G.) Common in dry prairies, Steilacoom and Shoalwater bays; May.

CARDAMINE ANGULATA, Hkr., (C.) March 4 to May. Common in shady rich woods everywhere.

C. HIRSUTA, Linn., *vars. β. & γ.*, (G.) Abundant in wet grounds everywhere; April.

C. OEIGOSPERMA, Nutt., (T.) April; Whidby's I. Less common.

DENTARIA TENELLA, Pursh. Whidby's I., in damp woods; April; tuberous, flowers purple.

SISYMBRIUM CANESCENS, Nutt., (T.) Prairies, Whidby's I., April. Common, 2 feet high.

SISYMBRIUM DEFLEXUM, Harvey, (G.,) *var?* (not in Fl. of N. A.) Sandy prairie at Shoalwater bay, not common, June, 4 feet high; May to July. "This seems to be a very luxuriant state of the species of Coulter's California colections. Having been collected by Dr. Parry in California, it will be characterized in the botany of the Mexican boundary survey." Gray.

ERYSIMUM ASPERUM, DC., (T.) Dry prairies near Steilacoom, not common; June 1.

DRABA NEMORALIS, Ehrh. *var. β.*, (T.) Prairies on Whidby's island; March 20; common.

CAPSELLA BURSA-PASTORIS, Moench., (T.) Prairies on Whidby's island. Introduced?

VIOLA ADUNCA, Smith, (G.) "Probably the same specifically as V. canina."—GRAY. Dry sandy prairies, Whidby's island and coast; blue; March 5. (Steilacoom, S.)

V. NUTTALLII, Pursh., (T.) Dry prairies, Whidby's island; March 20; common; yellow.

V. GLABELLA, Nutt., (G.) Damp, shady woods near coast; 10 inches; May 1; yellow.

DROSERA ROTUNDIFOLIA, Linn. Sphagnous swamps, near mouth of Columbia river; July.

HYPERICUM SCOULERI, Hooker. Common in prairies everywhere; June.

PARONYCHIA RAMOSISSIMA, (DC.,) (G.) Sandy prairie along coast at Shoalwater bay.

SPERGULARIA RUBIRA, Persoon, (G.) Sandy prairie along coast at Shoalwater bay; May.

HONCKENYA PEPLOIDES, Ehrh. *var. oblongifolia, Torr. & Gr.*, (G.) Sandy salt marsh, with the preceding; September.

SAGINA PROCUMBENS, Linn., (G.) With the two preceding; May.

MÆHRINGIA LATERIFLORA, Linn., (T.) Dry prairie near Steilacoom; June.

(ARENARIA TENELLA, Nutt., (G.) Steilacoom, S.)

(A. MACROPHYLLA, Hook. Steilacoom, S.)

STELLARIA NITENS, Nutt., (T.) Dry prairies; June; 6 inches; white.

STELLARIA BOREALIS, Bigelow, (*crispa. Cham. & Schlecht,*) (G.) Damp grounds near coast; March 1; common. (Steilacoom, S.)

CERASTIUM ARVENSE, Linn., (T.) Dry prairies; everywhere common; May to August.—(S.)

SILENE SCOULERI, Hkr. Prairie near Vancouver and on mountains; July; common.

CALANDRINIA MENZIESII, Hkr., (T.) Wet ground prairies near Steilacoom; not common; May. Also a dwarf hirsute variety in dry sandy soil, Str. De Fuca; April 5.

CLAYTONIA ALSINOIDES, Sims, (G.) Common in shady wet grounds; May. (Steilacoom, S.)

C. PERFOLIATA, Donn., (G.) In similar situations.

(C. PARVIFLORA, Dougl., (G.) Steilacoom, S.)

C. PARVIFOLIA, Moeh., (G.) On wet rocks, logs, &c., on coast; Shoalwater bay; July.

C. SPATHULATA, Dougl., (G.) Sandy soil, among logs, &c., on coast; Shoalwater bay; June.

C. CHAMISSONIS, Esch. & Ledeb. (*C. aquatica, Nutt.,*) (T.) Wet ground near Steilacoom; rare; May 20; creeping.

C. DICHOTOMA, Nutt. Wet prairie, Whidby's island; May 23; rare; two inches high.

GERANIUM CAROLINIANUM, Linn., (T.) Abundant on prairies; June to December.

G. ALBIFLORUM, Hooker. Common in woods near Vancouver; June.

IMPATIENS FULVA, Nutt., (T.) Mouth of Columbia river; July; seen nowhere else.

OXALIS OREGONA, Nutt. Shady woods along Columbia river, &c.; June; common.

MALVA BOREALIS, Linn., (T.) (Not in Fl. of N. A.) A single specimen found at Johnson's Point, Puget Sound; August 26; in flower; purple; six inches high; introduced. (?)

SIDALCEA MALVAEFLORA, Gray, (G.) Along edges of brackish marshes, near coast; six feet high; flowers one and a half inch in breadth; an elegant plant. The specimens collected on Cascade mountains, in 1853, are only about one-third these dimensions; the *S. oregana*, Nutt., now merged in above.

ACER. MACROPHYLLUM, Pursh., (G.) "White maple;" common in the forests, from Cascade mountains to coast; flowers May 15; leaves just expanding; forty to ninety feet high. (Steilacoom, S.)

A. CIRCINATUM, Pursh., (G.) "Vine maple." Wet woods from mountains to coast; flower, reddish purple, April 20; leaves turn scarlet in autumn.

A. GLABRUM, Torr., (T.) Smooth maple. Found west of Cascade mountains, only on Whidby's island; rare; flowering March 27; male flowers only found; greenish, in axillary fascles, with very short pedicels; there only a shrub, but collected in 1853, east of the mountains, in fruit, growing thirty feet high.

OREOPHILA MYRTIFOLIA, Nutt. Rare in woods near Fort Steilacoom; flowering in May; stragglers from the eastern mountains.

FRANGULA PURSHIANA, DC., (G.) Common on borders of forests; called "bearwood;" berries eaten by bears, but not by the Indians. "*Rhamnus purshianus*, DC., Hkr., &c. A genuine Frangula."—GRAY.

CEANOTHUS OREGANUS, Nutt. Common in thickets about Vancouver, &c.; June.

C. THYRSIFLORUS, (?) Esch., (T.) Found by me only on gravelly banks near Steilacoom; differs from the California plant in size, (only four feet;) *round* branches and *white* flowers; May 15.

VICIA GIGANTEA, Hooker. Common along coast and at Steilacoom in sand, climbing for 20 feet over bushes, &c.; May 10; seeds eatable.

V. OREGANA, Nutt., (T.) "Small form." A variety of *V. americana*, according to Dr. Gray.

LATHYRUS MARITIMUS, Bigel., (G.) Abundant on sandy prairies along sea-shore; April to July.

L. POLYPHYLLUS, Nutt., (T.) Abundant in fir forests from Columbia river north, presenting several varieties; June to July; purple.

L. VENOSUS, Muhl., *var.*, (T.) Fir forests Vancouver to Steilacoom; June; common.

L. PALUSTRIS, Linn., (G.) *vars. α. β.* Common everywhere in wet ground; May to October.

L. (?) VILLOSUS, Torr., (Expl. Exped. coll. ined.,) (T.) Dry, shady fir forest near Steilacoom; May 23; rare.

OROBUS LITTORALIS, *Gray*, PLATE VI. Astrophia littoralis, Nutt. Sandy sea-shore near mouth of Columbia river at high water mark; common; flowers pale blue and white; seeds few, as large as small peas; collected in flower May 23. "Villous; canescent all over; stems numerous from creeping root stocks, decumbent or ascending; stipules almost as long as the leaf, ovate or oblong, obtuse, the upper semihastate; leaflets one to three pairs, and with a usually smaller or imperfect terminal one or a pair of such, linear spatulate; racemes, five to ten flowered, dense, on an elongated peduncle; legume oblong, villous. Astrophia littoralis, *Nutt, in Torr. & Gray, Fl.* 1, *p.* 278. The specimens are in blossom, (while those of Nuttall were in fruit,) and the flowers are just those of Orobus, to which genus the plant undoubtedly belongs. The style accords with that of Orobus vernus, except, perhaps, the dilated and flattened portion extends further down; nor does the pod furnish any distinctive character."—GRAY.

PSROALEA PHYSODES, Dougl. (G.) Common on prairie near Steilacoom; June, whitish yellow, (S.) "Leaves used as a poultice."—GIBBS.

TRIFOLIUM MICROCEPHALUM, Pursh. (G.) Common on inland prairies; 2 feet high. (Steilacoom, S.)

T. FIMBRIATUM, Lindl. *var.* (G.) Prairies of interior and dry parts of marshes near coast; June, flowers purple, very variable, 1—2 feet, (S.)

T. PROCUMBENS, Linn. (G.) Cultivated ground; probably introduced; June.

(MEDICAGO SATIVA, Linn. (G.) Steilacoom, introduced, S.)

M. PARVIFLORA, Desf. (G.) About houses, Shoalwater bay, introduced.

HOSACKIA BICOLOR, Dougl. (G.) Common on prairie near Steilacoom; June, in wet soil, flowers yellow and white.

H. DECUMBENS, Benth. In dry soil with preceding; June, flowers yellow and red, (S.)

H. PARVIFLORA, Benth. (G.) On sandy prairie, Steilacoom and along the coast; June, flowers very small, red and yellow.

LUPINUS MICRANTHUS, Dougl. (T. & G.) Common in gravelly soil under shade, on prairie near Steilacoom; May 20th, flowers blue, white, or pink on different plants, size and shape of leaves variable.

L. LEPIDUS, Dougl. (G.) Open gravelly prairies about Puget Sound. About a foot high, in flower; June 10th, violet purple. The only fragrant species I found.—(S.)

ROBERTS LITHOGRAPH

L. POLYPHYLLUS, Lindl. (T.) Common in damp, rich woods near Steilacoom; June, often 5 feet high, the raceme 1½ foot long, color light or dark purple.

L. NOOTKATENSIS, Dougl. (G.) Sandy prairie along coast north of Columbia river; May 20th, flowers blue, with white keel. Differs from the description in wanting the "red and yellow veins," and the leaflets are pubescent on *both* sides. Stems procumbent, spreading, 2 feet long. The only species I found along the coast. The *L. littoralis*, Dougl., somewhat resembles this, but I met with none of which the roots were used by the Chenooks as food. They *do* dig in the same place the roots of an *Abronia*, which he may have mistaken for those of lupine. This species is said to grow on "rocky shores" which I have never examined.

L. LAXIFLORUS, Dougl. (T.) Very abundant on dry prairies of the interior, forming shrubby-looking tufts two feet high, the whole plant with a grayish appearance. Flowers pale purple, blue, or white, in racemes 6—12 inches long; June 10th, Steilacoom, (S.)

L. FLEXUOSUS, Lindl.? A more shrubby species, growing only in *dry woods*, and flowering a month earlier near Steilacoom. Flowers, larger, more ornamental, violet. Plant three feet high.

CERASUS MOLLIS, Dougl. (G.) A common tree on the borders of woods, &c., 25 feet high. Bark and form of tree very similar to the cultivated cherry. Flowers, April 1st, large, fragrant. Fruit, black, bitter; as large as a pea; ripe in June.

C. DEMISSA, Nutt. (T.) Banks of brooks near Steilacoom. White, June. Flowers large, many staminate only.

NUTTALLIA CERASIFORMIS, T. & G. (G.) A common shrub in wet grounds, especially on the brackish marshes of the Chehalis above tide water, &c., 6 feet high; flowers in March. Whole plant with the odor of *Stapshylea trifolia*. Berries black, bitter; ripe in July.

SPIREA OPULIFOLIA, Linn. Not rare, along brooks, &c.; Steilacoom, May 15th.

S. DOUGLASSII, Hkr. (G.) Abundant in wet grounds, on prairies, &c., throughout forest regions; July, 5 feet high. Besides the distinctions mentioned, I find the leaves only half as large as in *S. tomentosa*, and the small branches purplish, instead of rusty brown. Panicles smaller and denser.

S. MENZIESII, Hooker. Rare on damp prairie near Steilacoom, near woods. Flowers, June 20th. Stems simple, two feet high only, ending in large panicles of pale rose colored flowers; leaves in this specimen much paler below than above, 1½ inch long and ½ inch wide; flowers larger than in *S. salicifolia*, as found in New Jersey. Whole appearance intermediate between this and *S. tomentosa*.

S. ARIAEFOLIA, Smith. A common shrub about Vancouver, but rare near Puget Sound; 12 feet high; June 15th, (Steilacoom, S.)

S. ARUNCUS, Linn. (G.) Abundant on exposed clay banks, along coast, and at Puget Sound; July 1st.

GEUM MACROPHYLLUM, Willd. (G.) Common in wet shady grounds; May 15th.

GEUM TRIFLORUM, Pursh. (T.) Rare; on Whidby's island, (Penn's cove,) April 12th. Flowers richer purple than common.

POTENTILLA NORVEGICA, Linn. "*var.*, carpels glabrous," (T.) Rare on dry prairie near Steilacoom, June 20th.

P. GRACILIS, Dougl. (G.) *B. flabelliformis, Nutt.* Abundant on dry prairies of the interior; Steilacoom, May 15th, (S.)

P. ANSERINA, Linn. (G.) Abundant in salt meadows along the coast; June to August. I never met with *var. β. grandis.*

COMARUM PALUSTRE, Linn. (G.) In brackish marshes, Shoalwater bay; July 10th, not very common.

FRAGARIA VIRGINIANA, Ehrh. According to Professor Gray both this and the next two species are found in Washington Territory. My specimens, from various parts of the Territory near the coast, present so many shades of variety that, *without the fruit*, I cannot decide on more than two species. On the interior prairies they begin to flower in February, and continue till July, the fruit ripening from May 1 to August. (On summit of Cascade mountains.)

F. VESCA, Linn. (G.) Certainly grows on the prairies of the interior.

F. CHILENSIS, Ehrh. (G.) On sandy prairie along the coast. Flowers much larger than the others are, commonly; open in May. Fruit ripe in *July*, small, but I have not found it more "villous" than the other species; flavor the same. (Steilacoom.)

RUBUS NUTKANUS, Moc. (G.) Abundant in dry hilly woods, everywhere; May 1. Fruit ripe in July, dry and acid.

R. LEUCODERMIS, Dougl. Common in dry open grounds, burnt woods, &c.; May. Fruit ripe in July, like the common "blackcap," but larger and covered with a white bloom.

R. SPECTABILIS, Pursh. (G.) In damp, shady places, especially along the coast. The bright purple flowers expand in February to April. Fruit ripe in July; very fine in good situations.

R. TRIVIALIS, Michx. Not common. Wet, shady woods near Olympia. Flowers in May; much resembles *R. his pidus*, Pursh. Fruit not seen. Differs from description, in its far northern locality, in its leaves, which are not coricaceous, and in being more villous. "A form very like it occurs in Sonora."—THURBER.

RUBUS MACROPETALUS, Dougl. (G.) Common on dry hills, forming prostrate branches, and resembling *R. Canadensis*, Linn. Fruit very good; June.

ROSA FRAXINIFOLIA, Bork. (G.) Common in wet ground, everywhere; June 16; 6 feet.

ROSA GYMNOCARPA; Nutt. On borders of woods in dry soil, (Vancouver and Puget Sound.) Not rare; May 20. Flowers small, dark red, and *inodorous.*

PYRUS RIVULARIS, Dougl. Oregon crab apple. Wet grounds everywhere west of Cascade mountains; April, May. Fruit small, but good; ripe in July. Very useful for grafting on.

P. AMERICANA, DC. Mountain ash. On higher parts of Cascade mountains; rare. Fruit collected in July, ripe, larger than common, and of a bright orange color.

AMELANCHIER CANADENSIS, Linn., *var.*, *γ.*, Torr. & Gray. Abundant on borders of woods of the interior, but rare along the coast; May. Whole plant larger, and fruit much larger and finer than in New Jersey. "Service berry." (Steilacoom, S.)

EPILOBIUM ANGUSTIFOLIUM, Linn. (G.) Exceedingly abundant, especially in the dead forests, where its bright flowers color the surface for miles together in July; flowers from June to October, purple. (Steilacoom, S.)

E. TETRAGONUM, Linn. (G.) Not uncommon in large prairies near the coast; July.

E. COLORATUM, Muhl. Abundant in wet grounds everywhere; June to October.

E. MINUTUM, Lindl. (G.) Rare on the dry prairies near Steilacoom, in shade; June 10; flowers very small, pale purple; plant somewhat decumbent, branching from the base; leaves nearly linear; flowers much smaller than in *E. paniculatum*, which it seems to resemble much.—(S.)

E. PANICULATUM, Nutt. (G.) With *E. coloratum*, but less common; June to August. (*E. luteum*, said to be found there, I never met with.)

E. LUTEUM, Pursh.? (G.) Without flowers. (Steilacoom, S.)

ŒNOTHERA BIENNIS, Linn. (T.) Very common on every prairie throughout the country. A very large flowered variety grows in meadows at the mouth of the Columbia, with low, spreading, slender branches, not more than a foot in length, in habit resembling *Œ. fruticosa.*

Œ. VINOSA, Lindl. (G.) O. Romanzovii? On the prairies near Vancouver and Steilacoom I collected two quite distinct purple species growing in *the same soil*, and apparently holding their characters well. The present grew two feet high, slender; leaves distinctly peduncled, lanceolate, linear, an inch long or more, alternate; capsule sub-pedunculate, as long as the leaves, very narrow; tube of the calyx half as long as the petals; flowers an inch in breadth, *pale* purple, *not spotted.* The other:

Œ. QUADRIVULNERA, (G.) Dougl. *(O. amœna? O. Lindleyi?)* more branching and shorter; leaves sessile, oblong, lanceolate, half as long as in the preceding; capsule much thicker, shorter, closely sessile, pubescent; calyx half as long as the *dark purple* petals, which have a deep red spot at their base.

Both vary much in size with soil, but seem always to be in company, and to show the same relative distinctions. Neither is found west of the Coast range. The color of the stigma, I think, varies with the time of expansion, and thus several species appear to have been made of these two. My specimens do not agree exactly with the descriptions of either of those they are referred to, but have some characters of the others quoted with them. (Steilacoom, S.)

Œ. VINOSA, Lindl.? (G.) (Steilacoom, S.)

Œ. LEPIDA, Lindl. (G.) (Steilacoom, S.)

CIRCÆA ALPINA, Linn. Not rare in dark, damp woods about Puget Sound; July.

MEGARRHIZA OREGONA, Torr. & Gray. (G.) Common in the western portions of the Territory. On the dry prairies about Puget Sound it forms bushy tufts, two feet high and four or more wide, being evidently somewhat stunted. Where the soil is richer, and in the shade, it climbs thirty or forty feet over trees, &c., and has much larger leaves. Though nearly ripe, the fruit in July is as large as the fist, round, with three or four grooves and scattered, weak, soft prickles. The rind is about $\frac{1}{4}$ of an inch thick, and the inside entirely filled by the large seeds; root sometimes large enough to fill a flour barrel, tough, white, and very bitter. It is said to have strong cathartic properties. That of the Californian plant has been used to make "Stoughton's bitters!"

RIBES DIVARICATUM, Dougl. (G.) The most abundant species throughout the forest region, growing on borders of woods, shores, &c.; flowers in April; color deep purple, sometimes yellowish; fruit ripe in July, small, but good.

R. NIVEUM? Lindl. A species grows in the Coast mountains, about the head of the Chehalis, which may be this. I saw the unripe fruit in July, then as large as a musket ball, slightly crisped, and said to be excellent when ripe; plant shrubby, spiny; leaves small, trifid, and toothed. It is now cultivated by Mr. Durgin in his nursery, by Mr. Gibbs and others.

R. LACUSTRE, Poir. Whidby's island, in damp woods; rare; April 15; also in the higher parts of the mountains southward.

R. LAXIFLORUM, Pursh. A common species in damp maple groves along the coast; flowers April 1; lurid purple, smell unpleasant; fruit nauseous, small.

R. BRACTEOSUM, Dougl. (G.) Dark woods, along streams, from Cascades to coast. Flowers yellowish green; fruit black, as large as a pea, unpleasant; April 1.

R. SANGUINEUM, Pursh. (G.) Abundant in open fir forests; March 15; very beautiful in flower; fruit small and tasteless, bluish. (Steilacoom, S.)

SEDUM SPATHULIFOLIUM, Hook. (G.) On bare rocks about mouth of the Columbia; July; yellow. The *S. Oregona* I did not find there, but think I saw it on the top of the Cascade mountains, in August, 1853.

SAXIFRAGA INTEGRIFOLIA, Hook. (G.) Prairies of middle region; March 20 to June; leaves much thinner and more entire than in *S. Virginiensis;* scape fewer flowered and more racemose flower smaller. (Steilacoom, S.)

HEUCHERA MICRANTHA, Dougl. Common in moist woods; May; flowers white.

H. CYLINDRICA, Dougl. (T.) Not very common in dark woods near Steilacoom; June 11; flowers greenish yellow; scape three feet high. (S.) "Leaves bruised and applied to boils by the Nisquallies." (G.)

TOLMIEA MENZIESII, Torr. & Gray. Common in wet, shady woods, along rocky streams; June and July; flowers purple.

TELLIMA GRANDIFLORA, Dougl. (G.) Not rare on damp clay banks, &c., at Puget Sound and along the coast; May 1; flowers *cream color*, handsome, very similar in appearance to those of *Silene stellata.*

LITHOPHRAGMA PARVIFLORA, Nutt. Abundant on prairies of Whidby's island, &c.; March 25.

TIARELLA TRIFOLIATA, Linn. (G.) Common in dark, damp woods, especially near the coast; May to July.

CHRYSOSPLENIUM GLECHOMÆFOLIUM, Nutt. (G.) Rare, in wet woods about Shoalwater bay; June 4; yellowish green.

PHILADELPHUS GORDONIANUS, Lindl. Very common in dry, open grounds about Vancouver; rare about Puget Sound; six feet high; July. As *strongly scented* as the garden "mock orange." The distinctions of this and *P. Lewisii* seem obscure. "Leaves used by the Indians instead of soap." (G.)

SANICULA MENZIESII, Hook. & Arn. (T.) Prairies, common; April 20 to June; yellow, 1½ feet high.

S. BIPINNATIFIDA, Dougl. (T.) Rare on prairie at Penn's Cove, Whitby's island; April 20; purple flowers.

S. BIPINNATA, Hook. & Arn. *var.* (T.) Prairie near Steilacoom; June; flowers yellow, two feet high.

EDOSMIA GAIRDNERI, Hook. & Arn. (G.) Common on prairies near Puget Sound. (Steilacoom, "root eaten by the Nisqually Indians, and called S'hah-gok," S.)

OENANTHE SARMENTOSA, Nutt. (G.) Common in wet grounds along coast; rarer at Steilacoom. July to September; flowers white.

LIGUSTICUM SCOTICUM, Linn. (G.) Not rare along coast at Shoalwater bay; July. "Green stems peeled and eaten by the Indians." (G.)

CONIOSELINUM FISCHERI, Weim. & Grab. (G.) Common in moist sandy prairies, both on coast and interior; July to September; flowers white. Plant with the odor of anise when in dry soil, but disagreeable in moist ground. (Steilacoom, S.)

ARCHANGELICA PEREGRINA, Nutt. (G.) Wet alder groves at Shoalwater Bay; rare; 6 feet

high; July to September. "Apparently not the same as the plant of the coast of New England, referred to this species, though nearly allied to it. Both exhibit a more or less manifest involucre."—GRAY.

CYMOPTERUS? LITTORALIS, (n. sp.:) "Low, subcaulescent; petioles elongate, dilated, and sheathing at the base, above with the peduncles and rays tomentose-villous; leaves coriaceous, deeply 3-lobed or more commonly trisected; the divisions roundish, callose-serrulate, often 3-lobed or 3-parted, densely tomentose beneath, glabrous and finely reticulated above, the veinlets impressed; umbels shorter than the leaves; leaflets of the involucre and involucel subulate, the latter equalling the glomerate (whitish) flowers; calyx-teeth short and subulate; wings of the fruit equal (broad and white.) "On the sands of the sea-shore at Shoalwater bay, scarcely rising above the surface, where its leaves lay prostrate. These are dark green and glabrous, and nearly white below, drying up, but not deciduous; flowers gray and white; ripe fruit, white."—*Dr. Cooper.* Root thick, petioles stout, a span long. Leaflets and divisions of the leaf 1 or 2 inches long; peduncle 1 to 2 inches long; rays 10 to 12, half an inch to an inch in length; umbellets capitate, many-flowered. The very little fruit gathered is imperfect, but accords with that of Cymopterus, (except that the vittæ were not made out,) but the foliage is widely different from that of any species before known."—GRAY.

PEUCEDANUM LEIOCARPUM, Nutt. (G.) Prairies generally; on sandy sea-shore varies with leaves broader and shorter; stem coarse, 1 to 2 feet; June. "The green stems are peeled and eaten." (G.)

P. FŒNICULACEUM, Nutt. (T.) Prairies about Puget Sound; March 15 to June —; common; flowering when two inches high to one foot. "Root boiled and eaten." (G.)

HERACLEUM LANATUM, Michx. (G.) Abundant on sandy prairies along coast; May.

DAUCUS PUSILLUS, Mich. (G.) Rare on sandy prairie near mouth of Columbia; July. (Steilacoom, S.)

GLYCOSMA OCCIDENTALIS, Nutt. (T.) Common on rich prairies in shade; June to August.

CONIUM MACULATUM, Linn. "Large form of the northwest coast." (T.) Abundant everywhere in wet grounds, the large variety mostly near the sea, 8 feet high; June to October.

ECHINOPANAX HORRIDUM, Smith, (G.) Common in springy woods, from the highest parts of the Cascade mountains to the coast; May 15. (Steilacoom, S.)

CORNUS DRUMMONDII, (G. A. Meyer,) *C. sericea, var?* Torr. & Gray. Abounds along the edge of rivers, in sandy soils, down to tide-water. I think this is distinct from the following, though my specimens are too incomplete to decide from.

C. PUBESCENS, Nutt. (T.) Not very common, in damp woods, Steilacoom; May 28; 15–20 feet high. Bark *greenish*, twigs *dark purple*, leaves from two to four inches long, one to two and a half wide, ovate, obtuse or mucronate, glabrous, petals white.

C. NUTTALLII, Aud. (G.) Common in the fir forests, about as far north as Steilacoom; May 1. Very similar to *C. Florida*, and about twice as large in all parts. Much more ornamental in flower.

C. CANADENSIS, Linn. Cascade mountains, 4,000 feet to the mouth of Columbia; May.

LINNEA BOREALIS, Gronovius. (G.) Common in the same situations as *Cornus Canadensis;* June. (Steilacoom, S.)

SYMPHORICARPUS RACEMOSUS, Mich. (G.) Common along river banks down to tide-water; June. (Steilacoom, S.)

S. OCCIDENTALIS, R. Br. (T.) With the preceding, but less common; June to August.

LONICERA OCCIDENTALIS, Hook. Not uncommon about Puget Sound or borders of prairies. Resembles *L. sempervirens* in habit and growth, but the flowers are much less beautiful and smaller; orange; May 1 to June. Limbs of the corolla slightly unequal.

L. HISPIDULA, Dougl. Not very common; woods near mountains; May–June. Flowers rose.

L. (XYLOSTEUM) INVOLUCRATA, (Rich.) Wet ground, Cascade mountains to coast, especially about brackish marshes; April to July. Corolla bright yellow, bracts purple, becoming much larger and brighter as the fruit ripens. Berries united, dark rich purple. A variety collected in flower, April 22, on Whidby's island has all parts much smaller, the leaves ovate-lanceolate, flowers paler, and bracts green. The larger form seems rare near Puget Sound.

SAMBUCUS PUBENS, Mich. *var.* (*S. racemosa, Hkr.*) (G.) Common in the forests, growing 20 feet high; April 20.

S. GLAUCA, Nutt. Plains and prairies on both sides of Cascade mountains; most common eastward. Not west of Coast range; June 20; Steilacoom. Berries much more pleasant than those of *C. Canadensis;* ripe in July; blue.

GALIUM TRIFIDUM, Linn. (G.) Common in the thickets, &c.; June.

G. TRIFLORUM, Mich. (G.) In similar places, everywhere; June.

(G. APARINE, Linn. (G.) Steilacoom, S.)

VALERIANA CAPITATA, Willd. Rare; on rocky banks of "Stah-chess" river, near Olympia; May 1; 3 feet hight; flowers pink, fragrant.

PLECTRITIS CONGESTA, DC. (G.) Sandy soil along sea-shore and Straits of De Fuca; common. Flowers pink; June and July. Sometimes 3 to 4 feet high, decumbent. (Steilacoom, S.)

NARDOSMIA PALMATA, Hooker. (G.) Common on the sloping clay banks bordering Shoalwater bay and Puget Sound; March 15.

ASTER DOUGLASSII. (G.) This seems to be the only species of this numerous genus common west of the Cascade mountains, in this Territory. It grows in moist meadows, from two to five feet high; the latter on the coast. This large variety has leaves 4 inches long and 1 broad, and, except in the want of "canescent pubescence," seems to approach *A. Menziesii*, Lindl. Rays bright or dark purple; July to September.

ERIGERON SPECIOSUM, DC., *var.* β. (T.) On dry prairies near Puget Sound. Rare; July; 2 feet. Flowers pale purple.

(ERIGERON CANADENSE, Linn. (G.) Steilacoom, S.)

SOLIDAGO CONFERTIFLORA, DC. (G.) Abundant on the sandy sea-shore prairies in dry soil; September; not more than two feet high; raceme very large and dense, 6 inches long. (Steilacoom, S.)

S. ELONGATA, Nutt. var. (T.) Not abundant; in open spots, along Columbia river and sea-shore; not seen near Steilacoom; July; 4 feet high.

GRINDELIA INTEGRIFOLIA, DC. Common on wet meadows near the sea; *var.* β. near mouth of Columbia river; July. (Steilacoom, S.)

FRANSERIA CHAMISSONIS, Lesson; β. *cuneifolia, Nutt.* (G.) Common in sand hills near edge of salt water along coast; July.

F. BIPINNATIFIDA, Nutt. (G.) In the same situations near mouth of Columbia. Common. Both form bushy, prostrate tufts in the sand. I observed no intermediate forms of the leaves.

Balsamorhiza deltoidea, Nutt. (T.) Common on moist prairies of the interior, nearly to top of Cascade range, not west of Coast mountains; July; near Puget Sound. "Root edible." (G.)

Bidens cernua, Linn. (G.) Not common; in swampy salt marshes along sea-coast; September.

Bahia lanata, Nutt. (G.) Common on dry plains east of Coast range; June. (Steilacoom, S.)

Madia racemosa, Torr. & Gray. (G.) (Steilacoom, S.)

Achillea millefolium, Linn. (G.) Abundant everywhere in dry soil. (Steilacoom, S.)

Coinogyne carnosa, Lesson. (G.) Common on the edge of salt marshes among *Salicornia*, from which it is not easily distinguished when not in flower; July to September; flowers bright yellow.

Tanacetum Huronense, Nutt. (G.) Sandy soil along sea-shore and interior prairies; July.

Artemisia Douglasiana, Bess. (C.) On steep clay banks about Shoalwater bay; September. The only species of the genus I found west of the Cascade mountains; 5 feet high, very stout; lower leaves somewhat serrate-toothed on each side; scarcely trifid.

Gnaphalium decurrens, Ives. (G.) *var? Californicum, DC.* Common on sandy prairies along sea-shore; August; 2 feet.

G. luteoalbum, Linn. (G.) *var? Sprengelii, Hook. & Arn.* In similar situations along sea-shore; August and September; 1 foot.

G. palustre, Nutt. (G.) In wet sandy soil along sea-shore; not common; August.

G. purpureum, Linn., *var? ustulatum; Nutt. (T. & C.)* Not common; in dry prairie near Puget Sound, and with the preceding along coast; July; 1 foot. "A remarkable white floccose variety."—Gray.

Antennaria margaritacea, R. Br. (G.) A very large leaved form, 4 feet high; along coast; not rare; September.

A. Plantagifolia, Hooker. (T.) Dry prairies about Puget Sound; common; July.

Crocidium multicaule, Hooker. (T.) On grassy hill sides; Straits of De Fuca; April 1; flowering when only two inches high, and continuing until a foot high in June; Steilacoom; common.

Arnica amplexicaulis, Nutt. (G.) On rocky banks of streams among the coast mountains; July; 2 feet high.

Cirsium undulatum, Spreng. (T.) "A smoothish form;" common in open dry grounds near Columbia river, &c. The only native species west of Cascade mountains; 3 feet high. "The root is eaten."—Gibbs. Canada thistle.

Hieracium scouleri, Hook. (G.) Common in dry open grounds, burnt woods, &c.; June; rays white; 2 feet high.

Macrorhynchus laciniatus, Torr. & G. (T.) *and var. β.* Common on dry prairies about Puget Sound; June and July. Flowering; from 4 inches to 2 feet high. "Root edible." (G.)

M. heterophyllus, Nutt. (G.) (Steilacoom, S.)

M. Lessingih, Hook. (G.) Prairies along sea-shore; June.

Mulgedium leucophæum, DC. (G.) Common in dry open woods, &c.; August.

Sonchus asper, Vieill, (G.) Common about cultivated ground. Introduced?

Campanula linifolia, Hkr. Prairies east of Coast Range; common; June 10.

C. Scouleri, Hkr. (G.) In shade of fir forests; common; June 20; 2 feet. (Steilacoom, S.)

SPECULARIA PERFOLIATA, A. DC. (G.) Prairies; common; June. (Steilacoom, S.)

HETEROCODON RARIFLORUM, Nutt. (T.) Prairie near Steilacoom; rare; growing in cultivated grounds in spreading tufts a foot wide. Flowers either purple or white; June.

GITHOPSIS SPECULARIOIDES, Nutt. (T.) (Trans. of Amer. Phil. Soc., new series, p. 225.) With the preceding, and similar in growth, but smaller; June 20; purple.

VACCINIUM MACROCARPON, Aiton. (G.) Swamps near coast; abundant; June.

V. PARVIFOLIUM, Smith. (G.) Forests; common; flowers greenish purple; April; fruit red; July.

V. CAESPITOSUM, Mich. Prairies of interior; abundant; April; 6 inches high.

V. OVALIFOLIUM, Smith. Dark forests; not abundant; flowers greenish, rich; fruit blue, sour; August.

V. MYRTILLOIDES, Mich. Cascade mountains over 4,000 feet high; fruit good; ripe in August; brownish purple.

V. OVATUM, Pursh. (G.) Forests; evergreen; flowers pink; February to May; fruit black, sweet; September to December.

ARBUTUS MENZIESII, Pursh. (G.) Gravelly shores and banks, in fir forests; April; white.

ARCTOSTAPHYLOS TOMENTOSA, Pursh. Rare in fir forests; Vancouver to Cascade mountains; fruit unripe in July.

A. UVA URSI, Linn. (C.) Abundant on sandy prairie, from sea-shore eastward; May.

MENZIESIA FERRUGLNEA, Smith. (G.) Along coast; not abundant; 10 feet high; flowers in May; purplish.

M. EMPETRIFORMIS? Gm. Seen on Cascade mountains, at 4,000 feet elevation, flowering in August; rare.

GAULTHERIA SHALLON, Pursh. (G.) Abounds west of Cascade range; flowers in May; fruit resembles the harvest apple in flavor.

RHODODENDRON MAXIMUM? Linn. Common only in woods on Whidby's island, but said to extend along Cascade range southward. In dry gravelly soil 12 feet high. Flowers in April, (Port Townsend, S.)

KALMIA ANGUSTIFOLIA, Linn. (G.) Common in sphaguous swamps; June. A variety approaching *K. glauca, var. ovata.*

PYROLA ROTUNDIFOLIA, *var. bracteata*, Linn. (G.) Woods; June; common. (Steilacoom, S.) "This with *P. asarifolia, Mx.; P. uliginosa, Torr.; P. occidentalis, B. Br.*, and *P. picta, Hook.*, I take to be but one species."—Gray.

P. ELLIPTICA, Nutt. In similar situations less common; June. "A poultice made of the leaves raises blisters." (G.)

MONESES UNIFLORA, Linn. (G.) Woods, on logs, &c., along coast; rare; June.

CHIMAPHILA UMBELLATA, Pursh., (G.) Dry woods; common; June. (Steilacoom, S.)

PTEROSPORA ANDROMEDEA, Nuttal. Woods; Steilacoom; June; Cascade mountains at 4,000 feet; in August; not common.

MONOTROPA UNIFLORA, Linn. (G.) Forests; rare; July; near Chehalis river.

PLANTAGO MAJOR, Linn. A very large variety in an opening of the forest; Chehalis river; July; apparently indigenous.

P. MARITIMA, Linn. (G.) Sea-shore; common; June 20.

P. PATAGONICA, Jacq. (T.) *var. Gnaphalioides.* Prairie, head of Chehalis; July 4; rare.

ARMERIA VULGARIS, Willd. (G.) Abundant on sandy prairie along coast, coloring large patches, of a fine rose color when in flower; June; one foot high; rare; near Steilacoom.

DODECATHEON MEADIA, Linn. (G.) *(D. dentatum, Hkr.)* Common on prairie; March; one foot high.

TRIENTALIS EUROPEA, Linn. (G.) *(T. latifolia, Hkr.)* Common in shady forests; April. (Steilacoom, S.)

GLAUX MARITIMA, Linn. (G.) Common on sea beach; June.

APHYLLON UNIFLORUM, T. and G. Prairie near Steilacoom; common; May 15.

LINARIA CANADENSIS, Linn. (G.) Common on prairies everywhere; June. (S.)

SCROPHULARIA NODOSA, Linn. (G.) Common in damp ground along coast; June; a large variety.

COLLINSIA GRANDIFLORA, Dougl. (T.) Prairie near Steilacoom; April; common; one foot.

C. PARVIFLORA, Dougl. (T.) Gravelly shores of Puget Sound; March; blue. These two species seem to run together, both presenting several varieties.

MIMULUS LUTEUS, Willd. (G.) Wet banks and springs in forests; common; May to July.

M. MOSCHATUS, Dougl. (G.) Wet shady woods; common; May to July; one foot. (Steilacoom, G. S.)

M. FLORIBUNDUS, Dougl. (T.) Steilacoom, in wet ground; rare; June 20; one foot.

SYNTHYRIS RENIFORMIS, Benth. (G.) Prairies along Willopa river; March 18; flowers blue.

VERONICA ANAGALLIS, Linn. (G.) Wet shady woods; common; June.

V. SCUTELLATA, Linn. (G.) Common in open marshes; June.

CASTILLEJA PALLIDA, Kunth. (T. and G.) Several varieties, and perhaps another species, abound on the prairies; April to June.

ORTHOCARPUS TENUIFOLIUS, Benth. (G.) Sandy prairies along sea-beach; July; rare. (Steilacoom, S.)

O. HISPIDUS, Dougl. ? (T.) Steilacoom; May; rare.

MENTHA CANADENSIS, Linn. (G.) Common on wet prairies; June.

MONARDELLA ODORATISSIMA, Benth. (G.) Coast prairies; June.

BRUNELLA VULGARIS, Linn. (G.) Common on prairies; June; a large form. (Steilacoom, S.) "Mixed with grease, and applied to swellings by the Indians."—G.

SCUTELLARIA LATERIFLORA, Linn. (T.) River bank; July; very large.

MICROMERIA DOUGLASSII, Benth. (G.) In woods near Steilacoom; July; fragrant. (S.)

STACHYS PALUSTRIS, Linn. Wet grounds; June; three feet high.

S. CILIATA, Dougl. (G.) *var.* "more hairy." In similar situations, and more common; June.

AMSINKIA LYCOPSOIDES, Lehm. (G.) Sandy sea-shores, &c.; 2 feet; yellow. August to July. (Steilacoom, S.)

MYOSOTIS VERNA, Nutt. (T.) (*inflexa*, Engl. *stricta*, Lin.) Dry prairie, Steilacoom; May 15, rare, 2 feet, blue.

ERITRICHIUM FULVUM, A. DC. (T.) Gravelly banks of brooks; Steilacoom; common. Flowers May 15, very fragrant; white, but turns fulvous in drying.

E. CHORISIANUM, DC.? (T.) Dry prairies near Puget Sound; June; rare.

(E. SCOULERI, A. DC. (G.) Steilacoom, S.)

HYDROPHYLLUM MACROPHYLLUM, Nutt.? (T.) *var.* A variety with trifid leaves resembling *H. canadense.* Shady river banks; July.

H. CAPITATUM, Benth. (G.) In similar situations; common. July; 2–3 feet; white. (Steilacoom, S.)

PHACELIA CIRCINATA, Jacq. (G.) Abundant in dry openings of the forest; June.

EUTOCA MENZIESII, Benth. (G.) Prairies near Puget Sound, rare; June; 1 foot. (Steilacoom, S.)

NEMOPHILA PARVIFLORA, Benth. (T.) Woods near Puget Sound; June and July; rare.

POLEMONIUM MICRANTHUM, Benth. (T.) Rich soil, prairie, Whitby's I.; April 12; rare.

COLLOMIA GRANDIFLORA, Dougl. (G.) Common on prairies of interior; June; 2 feet, (S.)

C. GRACILIS, Dougl. (T.) Common in the same situations as the last.

GILIA ACHILLIÆFOLIA, Benth. With the preceding; common; July.

G. MICRANTHA, Steud. (T.) With the preceding; June, common, (S.)

G. TRICOLOR, Benth. (G.) In cultivated ground on coast. Introduced?

NAVARRETIA HETEROPHYLLA, Benth.. (T.) Prairie near Puget Sound; June; rare, (S.)

CALYSTEGIA SOLDANELLA, R. Br. (G.) On sandy sea-beach near salt water, common; June 20. Flower large, purple; plant prostrate.

CUSCUTA UMBROSA, Beurick. (G.) "*ex Hooker.*" Common among Salicornia on sea-coast. Sept.

SOLANUM NIGRUM, Linn. (G.) A large form, growing chiefly around cultivated grounds Introduced? July to December.

FRAXINUS OREGONUS, Nutt. Ash. River bank above tide-water; June.

ASARUM HOOKERI, Gray. (G.) *A. canadensis, var. Hook.* Forests; not common; June. (Steilacoom, S.) "The specimens are not in flower, but it is no doubt a distinct species."—GRAY.

SALICORNIA HERBACEA, Linn. (G.) Salt marshes; abundant.

CHENOPODIUM ALBUM, Linn. (G.) Several varieties about cultivated grounds on sea-shore. Introduced?

BLITUM RUBRUM, Linn. *var. B. humile*, Moq. (T.) Salt marsh at Shoalwater bay; May. Branches decumbent, fleshy; 6 inches long.

ABRONIA ARENARIA, Menz. (G.) Sandy sea-shore nearest to water, spreading. Flowers in June and July; orange yellow, and with the odor of orange blossoms.

A. UMBELLATA, Lamk. (C.) With preceding, a smaller plant; flowers pink, expanding in September; scentless.

POLYGONUM PARONYCHIA, Cham. (G.) Common on dry sandy prairies along sea-coast; July; 2 feet; rose-colored.

P. PERSICARIA, Linn. (G.) About cultivated grounds. Introduced? July.

P. TENUE, Michx. (G.) Sea-shore prairies; June.

P. AMPHIBIUM, *var.* AQUATICUM, Linn. (T.) In lakes about Puget Sound, common; June.

RUMEX SALICIFOLIUS, Weinm. (G.) About salt marshes, etc., common; June.

R. DOMESTICUS, Hartm. ex-Hook. (G.) Introduced? not common. (Steilacoom, S.) "Leaves boiled and eaten by Indians."—(G.)

R. PERSICARIOIDES, Linn. (G.) Common about salt marshes. June; 1 foot.

R. ACETOSELLA, Linn. Becoming common in cultivated prairies. Introduced 20 years since at Nisqually farms, and is now spread for miles around, crowding out everything else in the poor gravelly soil.—(S.)

SHEPHERDIA CANADENSIS, Nutt. Found only on banks near Straits of Fuca; flowering March 10.

QUERCUS GARRYANA, Dougl. White Oak. The abundant and sole species of oak, in prairies. Flowers, May 25.

CORYLUS AMERICANA, Walter. (C.) Hazel. An abundant shrub in the fir forests; March.

MYRICA CALIFORNICA? Cham. (G.) Not common in marshes along coast; leaves evergreen, *inodorous;* flowers and fruit not found.

ALNUS OREGANA, Nutt. (*A. rubra?* Bong.) Alder. Common near coast. See notes on trees.

A. VIRIDIS, DC. (T.) A shrub 20 feet high, rare; Steilacoom.

SALIX BRACHYSTACHYS, Benth. *Scouleriana*, Barratt. (G.) Common along coast, &c.; Feb. 20, yellow, 25—30 feet high. Specimens of several other species were collected, but in the uncertain state of our knowledge of western willows, cannot be confidently named.

POPULUS TREMULOIDES, Michx. Common on mountains and around lakes near Puget Sound.

P. ANGUSTIFOLIA, Torr. Abundant on river banks above tide-water. The specimens do not certainly identify the other species, but they are probably *P. balsamifera*, Linn., and *P. monilifera*, Ait.

URTICA GRACILIS, Ait. (G.) Nettle. Abundant in wet woods; July.

PINUS PONDEROSA, Dougl. Yellow Pine. Prairies near Steilacoom, not common; stunted.

P. CONTORTA, Dougl.? Scrub Pine. Damp sandy soil, sea-coast and interior. (Steilacoom, S.)

ABIES CANADENSIS, Michx. Hemlock. Damp forests, common; April.

A. DOUGLASSII, Sabine. "Red" and "Black Fir." See notes on forest trees. March; yellow.

A. GRANDIS, Dougl. "Yellow Fir." Young cone green and resinous.

A. TAXIFOLIA,? Lambert. "White Spruce." Undoubtedly a distinct species,

A. MENZIESII, Lambert. "Black Spruce." April; flower and cones red.

THUJA GIGANTEA, Nuttall. "Cedar."

TAXUS BREVIFOLIA, Nuttall. "Yew." (Oregona in plate.) April; yellow.

SYMPLOCARPUS KAMTSCHATICUS, Bong. (G.) Wet grounds, in forest; sea-shore to 3,000 feet high on mountains. Flowers March 21. Spathe white. (Steilacoom, S.)

TYPHA LATIFOLIA, Linn. (G.) Common in wet grounds.

SPARGANIUM RAMOSUM, Smith, (G.) Banks of streams, rare; June.

ZOSTERA MARINA, Linn., (G.) Common in bays, in shallow water or mud.

RUPPIA MARITIMA, Linn. (G.) With the preceding; common.

TRIGLOCHIN MARITIMUM, Linn. (G.) About the edge of high water in mud, common.

SAGITTARIA SAGITTIFOLIA,? Linn. Tubers sent by Dr. Suckley from Steilacoom, said to be of this plant, are eaten by the Indians, under the name of "Wappatoo."

CALYPSO BOREALIS, Salisb. (T.) Common in dark, damp fir forests, on Whidby's island; April 5.

PLATANTHERA LEUCOSTACHYS, Lindl. (G.) Common in moist prairie near Steilacoom; June. Flowers white, 4 feet high. (S.)

P. HYPERBOREA, Lindl. Steilacoom, not common; June, 2 feet high.

SPIRANTHES CERNUA, Rich. (G.) Common in prairies everywhere; July to October. *S. decipiens*, Hook, (G.) (Steilacoom, S.)

SISYRINCHIUM ANCEPS, Linn., (G.) Abundant in prairies.

S. GRANDIFLORUM, Dougl. (T.) Rare. Straits of Fuca, March 18, one specimen; flower rich purple; 1 foot high.

TRILLIUM GRANDIFLORUM, Salisb. (G.) Forests in damp shade, everywhere; August 1.

T. OVATUM, Pursh. (G.) (Steilacoom, S.) "Root used as a poultice." (G.)

SMILACINA RACEMOSA, Desf. (T.) Common in wet woods; May. "The berries are sometimes eaten." (G.)

S. BIFOLIA, Ker. *var.* TRIFOLIA, (G.) Common in woods, mostly along coast; May 15.

LILIUM CANADENSE, Linn. (G.) Prairies of interior, June and July; 5 feet high. Flowers smaller, leaves broader than common. (Steilacoom, G.) "Root edible." (G.)

ERYTHRONIUM GRANDIFLORUM, Pursh. Prairies of interior, March 18. Common.

FRITILLARIA LANCEOLATA, Pursh. With preceding. Whidby's island, April 18. "Root edible." (G.)

PROSARTES MENZIESII, Hook. (G.) Spruce forests along coast; May. Common.

P. HOOKERII, Torr. (T.) *P. lanuginosa, β. major*, Hook. Prairie, Whidby's island, in shade, rare; April 12.

STREPTOPUS AMPLEXIFOLIUS, DC. (G.) Common in spruce forests; May. (Steilacoom, S.)

ANTICLEA DOUGLASSII, Torr. (T.) *(In Whipple's Rept. P. R. R. Vol. IV.)* Prairie at Steilacoom; June. Rare.

A. NUTTALLII, Torr. (T.) Prairie on Whitby's island; April. Rare.

VERATRUM ESCHSCHOLTZII, Torr. *V. viride, var.*? Woods near Vancouver, June; 6 feet. Flowers white.

HESPEROSCORDON HYACINTHINUM, Lindl. (T.) White. Prairies at Steilacoom; June. Common; 3 feet high. "Root edible." (G.)

DICHELOSTEMMA CONGESTUM, Kunth. (G.) With the preceding. Common; June. 2 feet, purple. (S.) "Poison Camass;" Bah-kah of Nisquallies. (G.)

BRODIEA GRANDIFLORA, Smith, (G.) Rare, on prairie near Puget Sound; June. Purple, (S.) "Root edible." (G.)

CAMASSIA ESCULENTA, Lindl. (T.) "Camass." Common on prairies everywhere; March 15. Blue.

LUZULA PARVIFLORA, Desvaux, (G.) Dry hills, common; 3 feet high.

L. CAMPESTRIS, var. Desv. (T.) Wet meadows, June; 1 foot high.

JUNCUS BALTICUS, Willd. (G.)

J. BUFONIUS, Linn. (G.) Together about salt marshes; July.

ELEOCHARIS PALUSTRIS, *var.*? (E. SCABRA, R. Brown.) "Without perigynous bristles." (T.) Marshes.

SCIRPUS LACUSTRIS, Linn. (G.) Common in marshes along coast. "Tule."

S. MARITIMUS, Linn. (G.) With the preceding.

ERIOPHORUM VAGINATUM, Linn. *(Chamissonis,?* Meyer.) Rare in cranberry marshes.

CAREX BROMOIDES, Schkur. (G.) On dry hills along coast; not common.

C. SCOULERI, Torr. (G.) Common in wet grounds, April and May; 2 feet.

C. SITCHENSIS, Bongard, (G.) Abundant in salt marshes, July; 3 feet.

C. MACROCEPHALA, Willd. (G.) Sandy prairies of sea-shore, common; May. 1 foot.

C. TERETIUSCULA, Good. "or very near it; spike shorter." (T.)

ALOPECURUS GENICULATUS, Linn. (T.) Wet ground at Steilacoom; June. Introduced.?

A. ARISTULATUS,? Michx. "between the two;" (T.) With the preceding.

KOELERIA CRISTATA, Persoon, (T.) Dry prairies; June.

POA BOREALIS, Hook. (G.) Dry hills on coast; June.

P. ANNUA, Linn. (T.) Prairies. Introduced.?

HORDEUM PRATENSE, Kunth. (G.) With preceding.

AIRA ELONGATA, Hook. (G.) Damp prairies and salt meadows, where it is the common grass.

A. LATIFOLIA, Hook. (G.) With preceding, but less common.

FESTUCA MYURUS, Linn. (G.) Steilacoom. (S.)

PANICUM. Uncertain species. (T.) Steilacoom.

CERATOCHLOA BREVIARISTATA, Hook. (T.) Dry prairie at Steilacoom; June. Common.

CERATOCHLOA GRANDIFLORA, Hook. (T.) Salt meadows; 3 feet high. Common.

LOLIUM TEMULENTUM, (T.) "Near L. MULTIFLORUM." Near summit of Cape Disappointment.

POLYPOGON. "New species.?" (T.)

ELYMUS ARENARIUS, Linn. (G.) Sandy sea-shore prairies, 6 feet; July. (Steilacoom, S.)

CALAMAGROSTIS STRICTA, Nutt. (G.) With the last; 2 feet high; July.

EQUISETUM FLUVIATILE, Linn. Damp woods, common.—(S.)

PTERIS AQUILINA, Linn. (G.) Abundant on prairies everywhere. (Steilacoom, S.)

POLYPODIUM VULGARE, Linn. (G.) *var. occidentale. P. falcatum*, Kellogg, in Proc. Cal. Acad. Sciences. Among moss or wet rocks, and dead trunks.

ADIANTUM PEDATUM, Linn. (G.) Not rare; in shady, damp woods. (S.)

ASPIDIUM SPINULOSUM, Willd. "ex. Hooker." (G.) Woods; 4–6 feet high.

A. MUNITUM, Kunth. (G.) Woods, common; forming dense tufts 3 or 4 feet high and wide.

BLECHNUM BOREALE, Swartz. (G.) Spruce forest at coast, not rare; 2 feet high.

MARCHANTIA POLYMORPHA, *(Hepaticæ,)* Linn. (Steilacoom, S.)

I have received the following letter from Mr. Samuel Ashmead, relative to two interesting marine plants, which were submitted to him for examination:

ACADEMY OF NATURAL SCIENCES,
Philadelphia, April 20, 1857.

DEAR SIR: I received the two specimens of marine Algæ from Washington Territory, and as they do not decompose in fresh water, I transferred them to new papers and marked the names thereon.

PHYLLOSPORA MENZIESII, Ag. This plant was first discovered by Mr. Menzies in the deep waters of Nootka Sound, where it sometimes grows to an enormous length. The specimen you send is much injured by transportation; hundreds of the marginal leaves were broken off. It is a fertile specimen having "receptacles," which renders it very interesting. You will find it accurately described by Harvey in his Nereis Bor. Am. p. 62, vol. 3 or 5, Smithsonian Contributions to Knowledge. Collected in Puget Sound, by Dr. G. Suckley, U. S. A.

CALLOPHYLLIS LACINIATA, Kutz. This plant is exceedingly rare on the American coast; the species is subject to considerable variety of form, but it is easily recognized under the microscope, by the peculiar internal structure of the frond. You will find it also described by Harvey, Nereis Bor. Am. p. 171, vol. 3 or 5, Smithsonian Contributions to Knowledge. Collected at Shoalwater bay, by Captain C. J. W. Russell.

As I had not before seen either of these species, I am much pleased to be able to add them to my collection.

Very truly, yours, &c.,

SAMUEL ASHMEAD.

Doctor COOPER.

INDEX TO BOTANICAL REPORT.

	Page.
Abies	65
Abronia	50, 64
Aconitum	47
Acer	47, 53
Acerates	42
Achillea	41, 61
Achlys	52
Actæa	36, 52
Actinella	41
Aira	67
Adiantum	45, 67
Alisma	44
Allium	44
Alnus	65
Alopecurus	66
Ambrosia	40
Amelanchier	56
Amorpha	38
Ammannia	39
Ampelopsis	37
Amsinckia	63
Amphicarpæa	37
Andropogon	45
Anemone	36
Anoplon	41
Anoplanthus	41
Antennaria	41, 61
Anticlea	66
Aphyllon	41, 63
Aplopappus	40
Apocynum	42, 50
Aquilegia	36, 51
Aralia	40
Arabis	36, 52
Arbutus	62
Archangelica	58
Argemone	36
Armeria	63
Arctostaphylos	62
Arenaria	53
Arnica	49, 61
Artemisia	41, 49, 61
Arum	44
Asarum	42, 64
Aspidium	67
Asplenium	45
Asclepias	42, 50
Aster	40, 47, 60
Astragalus	38, 47
Atriplex	42
Bahia	61
Balsamorhiza	61
Barbarea	52
Bear-wood	53
Berberis	52
Bidens	61
Blechnum	67
Blephilia	42
Blitum	60
Botrychium	45
Bouteloua	44
Brickellia	47
Broad-leaved trees	23
Brodiea	65
Brunella	63
Callophyllis	67
Calamagrostis	44, 67
Calandrinia	53
Calochortus	44, 50
Calypso	65
Calystegia	42, 64
Camassia	66
Campanula	41, 50, 61
Capsella	37, 52
Carex	44, 66
Cardamine	52
Cascade mountains	9
Castilleja	41, 50, 63
Ceanothus	37, 53
Cerastium	37, 53
Cerasus	38, 55
Ceratochloa	67
Chenopodium	64
Chamærhodos	39
Chimaphila	62
Chryseis	52
Chrysopsis	40, 49
Chrysosplenium	58
Circæa	39, 57
Cirsium	41, 61
Cistopteris	45
Claytonia	53
Clematis	36
Cleome	37, 47
Climate of western region	28
Coinogyne	61
Collinsia	63
Collomia	42, 50, 64
Comandra	43
Comarum	56

	Page.
Coniferous trees	20
Conioselinum	58
Conium	59
Cornus	40, 59
Corydalis	36, 52
Corylus	65
Crataegus	39
Crocidium	61
Cuscuta	64
Cymopterus	39, 59
Cynoglossum	42
Cypripedum	44
Daucus	59
Delphinium	36, 47, 51
Dentaria	52
Desmodium	38
Dichelostemma	65
Dielytra	52
Dodecatheon	63
Draba	37, 52
Drosera	52
Echcacea	40
Echinocystis	39
Echinopanar	59
Echinospermum	42
Edosmia	58
Ellisia	42
Eleocharis	66
Elodea	37
Elymus	45, 67
Endolepis	43
Epilobium	47, 56
Equisetum	45, 67
Erigeron	40, 47, 60
Eriogonum	50
Eriophorum	66
Eritrichium	63
Erodium	47
Erysimum	36, 52
Erythronium	66
Eupatorium	40
Euphorbia	43, 50
Euphrosyns	40
Eutoca	64
Eurotia	43
Festuca	44, 67
Forests of western region	20
Fragaria	37, 56
Frangula	53
Franseria	60
Fraxinus	42, 64
Fresh waters	30
Fritillaria	66
Gaillardia	41. 49
Galium	40, 47, 60
Gaultheria	62
Gaura	39
Geranium	37, 47, 53
Geum	39, 55
Gilia	50, 64
Githopsis	62
Grindelia	40, 47, 60
Gleditschia	38
Glycirrhryza	37
Great Plain of Columbia	12
Glaux	63
Glycosma	59
Gnaphalium	61
Hedeoma	42
Helenium	49
Helianthus	40, 49
Heliopsis	40
Heracleum	59
Hesperoscordon	66
Heterocodon	62
Heuchera	39, 58
Hieracium	61
Honckenya	52
Hordeum	45, 66
Hosackia	38, 47, 54
Hydrophyllum	42, 63
Hymenopappus	41
Hypericum	52
Impatiens	53
Iris	44
Iva	40
Juncus	44, 66
Juniperus	44
Kalmia	62
Koeleria	44, 66
Kuhnia	40
Lathyrus	37, 47, 54
Lepachys	40
Lepidium	37
Lespedeza	38
Liatris	40
Ligusticum	58
Lilium	44, 65
Linaria	63
Linnea	59
Linum	37
Linosyris	47
Lithospermum	42
Lithophragma	58
Lobelia	41
Lolium	67
Lonicera	60
Lophanthus	42
Lupinus	38, 47, 54
Luzula	66
Lycopus	41
Lygodesmia	41
Lysimachia	41
Machaeranthera	47
Macrorhynchus	61
Madia	61
Malacothrix	49
Malva	53
Malvastrum	37, 47
Maple	53

	Page.
Marchantia	67
Medicago	54
Megarhiza	57
Menispermum	36
Mentha	41, 50, 63
Mentzelia	39, 47
Menziesia	62
Micromeria	63
Mimulus	50, 63
Mœhringia	37, 53
Monarda	42
Monardella	63
Moneses	62
Monotropa	62
Morus	43
Mulgedium	41, 50, 61
Musenium	39
Myrica	65
Nardosmia	60
Nasturtium	36, 47, 52
Navarretia	64
Negundo	37
Nemophila	64
Nuttallia	55
Nuphar	52
Obione	43
Oenanthe	58
Oenothera	39, 47, 56
Onosmodium	42
Opuntia	39
Oreophila	53
Orobus	54
Orthocarpus	50, 63
Osmorrhiza	39
Oxalis	37, 53
Oxybaphus	42
Oxytropis	38
Panicum	45, 67
Pentalophus	42
Pentstemon	41, 50
Petalostemon	38
Peucedanum	59
Phalaris	44
Phelypœa	41, 50
Philadelphus	58
Phlox	42, 50
Phacelia	64
Phyllospora	67
Physalis	42
Pilea	43
Pinus	65
Plantago	41, 62
Platanthera	65
Plectritis	60
Poa	44, 66
Podophyllum	36
Polemonium	50, 64
Polygala	37
Polygonatum	44
Polygonum	43, 64
Polypodium	67
Polypogon	67
Populus	43, 65
Potentilla	39, 47, 55
Prairies of western region	15
Prosartes	66
Psoralea	38, 54
Pteris	67
Pterospora	62
Pulsatilla	36
Pyrola	50, 62
Pyrus	56
Quercus	64
Ranunculus	36, 47, 51
Reboulea	45
Region west of mountains	14
Rhamnus	53
Rhododendron	62
Rhus	37
Ribes	39, 57
Rosa	39, 56
Rubus	39, 56
Rumex	43, 64
Ruppia	65
Sagina	53
Sagittaria	44, 65
Salicornia	64
Salix	44, 65
Saltwater	32
Sambucus	60
Sanguisorba	39
Sanicula	39, 58
Saxifraga	58
Scenery	34
Scirpus	66
Schrankia	38
Scrophularia	63
Scutellaria	42, 63
Sedum	58
Senecio	41
Sesleria	44
Shepherdia	43, 64
Shrubby undergrowth	26
Sidalcea	47, 53
Silene	53
Silphium	40
Sinapis	37
Sisymbrium	36, 52
Sisyrinchium	44, 65
Smilacina	44, 65
Smilax	44
Solanum	64
Solidago	40, 47, 60
Sonchus	61
Sophora	38
Sparganium	65
Spartina	44
Specularia	41, 62
Spergularia	52
Spiræa	47, 55

	Page.
Spiranthes	50, 65
Spraguea	47
Stachys	42, 50, 63
Stanleya	37
Staphylea	37
Stellaria	53
Stipa	44
Streptopus	66
Symphoricarpus	40, 59
Symplocarpus	65
Synthyris	63
Tanacetum	61
Taxus	65
Tellima	58
Teucrium	42
Thuya	65
Tiarella	58
Thalictrum	36
Thermopsis	38
Tolmœa	58
Trientalis	63
Triglochin	65
Triticum	45
Tradescantia	44
Trifolium	38, 54
Trillium	65
Troximon	41
Typha	65
Urtica	43, 65
Uvularia	44
Vaccinium	62
Valeriana	60
Verbena	41
Veratrum	66
Veronica	41, 63
Vicia	37, 47, 54
Vilfa	44
Viola	37, 52
Woodsia	45
Xanthium	40, 49
Yucca	44
Zanthoxylum	37
Zostera	65
Zygodenus	44

PART III.

EXPLORATIONS AND SURVEYS FOR A RAILROAD ROUTE FROM THE MISSISSIPPI RIVER TO THE PACIFIC OCEAN.
WAR DEPARTMENT.

ROUTE NEAR THE FORTY-SEVENTH AND FORTY-NINTH PARALLELS, EXPLORED BY I. I. STEVENS, GOVERNOR OF WASHINGTON TERRITORY, IN 1853-'55.

ZOOLOGICAL REPORT.

WASHINGTON, D. C
1859.

CONTENTS.

No. 1.

REPORT UPON THE INSECTS COLLECTED ON THE SURVEY.

BY JOHN T. LECONTE, M. D.

No. 2.

REPORT UPON THE MAMMALS COLLECTED ON THE SURVEY.

CHAPTER I.

REPORT BY J. G. COOPER, M. D.

CHAPTER II.

REPORT BY DR. G. SUCKLEY, U. S. A.

CHAPTER III.

REPORT BY DR. G. SUCKLEY AND G. GIBBS, ESQ.

No. 3.

REPORT UPON THE BIRDS COLLECTED ON THE SURVEY.

CHAPTER I.

LAND BIRDS, BY J. G. COOPER, M. D.

CHAPTER II.

WATER BIRDS, BY DR. G. SUCKLEY, U. S. A.

No. 4.

REPORT UPON THE REPTILES COLLECTED ON THE SURVEY.

BY J. G. COOPER, M. D.

No. 5.

REPORT UPON THE FISHES COLLECTED ON THE SURVEY.

BY DR. G. SUCKLEY, U. S. A.

CHAPTER I.

REPORT UPON THE SALMONIDÆ.

CHAPTER II.

REPORT UPON THE FISHES EXCLUSIVE OF THE SALMONIDÆ.

No. 6.

REPORT UPON THE MOLLUSCA COLLECTED ON THE SURVEY.

BY WILLIAM COOPER.

No. 7.

REPORT UPON THE CRUSTACEA COLLECTED ON THE SURVEY.

BY J. G. COOPER, M. D.

LIST OF ILLUSTRATIONS.

INSECTS.

Page.

PLATE I.—Fig. 1–19 72
PLATE II.—Fig. 1–16 72

MAMMALS.

PLATE II.—Fig. 1. *Lynx fasciatus*, Red or Barred Lynx 90
Fig. 2. *Felis concolor*, young? Panther. (Possibly of the preceding species) 74
PLATE V.—(Fig. 1. *Dipodomys ordii*, Pouched Jumping Mouse; Fort Laramie, south.) Fig. 2. *Tamias townsendii* var. *cooperi*, Cooper's Ground Squirrel 80
PLATE VII.—*Sciurus douglassii* var. *suckleyi*, Suckley's Pine Squirrel 79
PLATE VIII.—(Fig. 1. *Hesperomys texanus*, Texas Mouse.) Fig. 2. *Perognathus flavus*, Yellow Pouched Mouse, Nebraska. 101
Fig. 3. *Hesperomys boylii*, Boyle's Wood Mouse; Washington Territory to California 84
PLATE IX.—(Fig. 1. *Dipodomys agilis*, Pouched Jumping Mouse; California, Oregon?) Fig. 2. *Neotoma occidentalis*, Bushy Tailed Rat; coast of Washington Territory 85
PLATE XV.—*Lepus washingtonii*, Red Rabbit 87

NOTE.—For figures of the following species here mentioned, see other volumes Pacific Railroad Report.

In volume X.

PLATE XIV.—*Lepus trowbridgii*, Trowbridge's Rabbit 86
PLATE XVI.—*Antilocapra americana*, Prong-horned Antelope 137

In volume VIII.

PLATE XXVI.—*Sorex vagrans*, The Wandering Shrew 73
Neosorex navigator, Cascades Water Shrew 73
PLATE XXVII.—*Sorex suckleyi*, Suckley's Shrew 89
PLATE XXVIII.—*Urotrichus gibbsii*, Gibbs' Shrew Mole 89

In volume VI, also, from Dr. Cooper's specimen:

PLATE XXIX.—*Mephitis bicolor*, Little Striped Skunk 76
PLATE III.—Fig. *Spermophilus beecheyi*, California Ground Squirrel 81

Plates illustrating the anatomy and osteology of most of the species will also be found in volume VIII.

BIRDS.

PLATE XI.—*Falco nigriceps*, Western Duck-Hawk 142
PLATE XVI.—*Buteo cooperi*, California Hawk 148
PLATE XXI.—*Corvus carnivorus*, Northern Raven 210
PLATE XXIII.—*Corvus americanus*, American Crow 211
PLATE XXIV.—*Corvus caurinus*, Northwestern Fishcrow 211
PLATE XXV.—*Pica hudsonica*, Black-billed Magpie 213
PLATE XXVIII.—Fig. 2. *Passerculus sandwichensis*. (Fig. 1. *Junco dorsalis*, New Mexican Snow Bird) 199
PLATE XXXVIII.—*Podiceps occidentalis*, Long-necked Grebe 281

NOTE —Figures of the following species here mentioned will be found in other volumes.

PLATE XXVI.—*Pica nuttallii*, Yellow-billed Magpie, Volume VI 213
PLATES II and III.—*Buteo elegans*, Red-bellied Hawk, Volume X 147
PLATE IV.—*Passerculus alaudinus*, Lark Sparrow, Volume X 149
PLATE VII.—*Strepsilas melanocephalus*, Black-headed Turnstone, Volume X 234
PLATE VIII.—*Podiceps californicus*, California Grebe, Volume X 282
PLATE XIII.—*Buteo swainsonii*, Swainson's Hawk, Volume X 288
PLATE XXXII.—*Eremophila cornuta*, Sky Lark, Volume X 195
PLATE XXXIII.—Fig. 5. *Sitta aculeata*, (head,) Slender-billed Nuthatch, Volume X 143

REPTILES.

PLATE XII.—*Crotalus confluentus*, Prairie Rattle Snake 295
PLATE XIII.—*Eutainia faireyi*, Fairey's Garter Snake 299
PLATE XIV.—*Eutainia haydenii*, Hayden's Garter Snake 298
PLATE XV.—Fig. 1. *Eutainia cooperi*, Red Striped Garter Snake. Fig. 2. *Eutainia concinna*, One Striped Garter Snake .. 296

Page.

PLATE XVI.—*Eutainia faireyi*, young, Prairie Water Snake 297

PLATE XIX.—Fig. 1. *Regina grahamii*. Fig 2. *Celuta amoena*, Missouri 299, 302

PLATE XX.—Fig. 1. *Bascanion vetustus*, Blue Racer, Washington Territory. Fig. 2. *Regina Kirtlandii*, Kirtland's Snake. 297

PLATE XXI.—*Pituophis sayi*, Prairie Bull Snake 300

PLATE XXII.—*Scotophis vulpinus*, Fox Snake 299

PLATE XXIII.—Fig. 1. *Rana halecina*, Spotted Frog. *b*, under surface of head; *c*, under surface of left fore foot; *d*, under surface of left hind foot. (Fig. 2. *Rana boylii*, Boyl's Frog, California. *a, b*, lateral and under views; *c, d* as in preceding. Fig. 3. *Rana boylii*, Boyl's Frog, young. *b c* as *c* and *d* in preceding. Fig. 4. *Rana septentrionalis*, Northern Frog, Fort Ripley, Minnesota. *a, b*, etc., as in preceding. Fig. 5. *Rana catesbiana*, Catesby's Frog. References as in Fig. 2. Not yet published) 306

PLATE XXXI.—Fig 1. *Ambystoma tenebrosum*, Black Mudpup. *b*, head from above. Fig. 2. *Ambystoma ingens*, The Huge Mudpup. *a*, full view; *b*, side of head; *c*, head above; *d*, from below; *e, f, g*, as seen from below. Fig. 3. *Ambystoma macrodactylum*, Astoria, Oregon. Fig. 4. *Ambystoma vehiculum*, Astoria, Oregon. Fig. 5. *Batrachoseps attenuatus*, California. (Not yet published.)

NOTE.—For the following species see Volume X, Pacific Railroad Report.

PLATE I.—*Emys marmorata*, (var. nigra,) Western Turtle 293

PLATE XVII.—*Eutania vagrans* 297

PLATE XLIV.—Fig. 1. *Siredon lichenoides*, Ground Puppy 306

Details of anatomy, &c., are given in plates of the same volume.

FISHES.

PLATE I.—*Ambloplites aeneus*, Black Bass, &c 350

PLATE XI.—Fig. 1–4. *Labrax chrysops*, Bass of the Mississippi. Fig. 5–8. *Stizostedion boreus*, Okow or Pike Perch .. 351

PLATE XV.—Fig. 1. *Aspicottus bison*, Buffalo Sculpin. Fig. 2. *Leptocottus armatus*, Slender Sculpin 353

PLATE XVI.—Fig. 1. *Scorpaenichthys marmoratus*. Fig. 2, 3. *Leiocottus hirundo*, (Vol. X, pp. 62, 64.)

PLATE XIX.—*Chiropsis constellatus*, Starry Chiropsis, (Vol. X, p. 42.)

PLATE XX.—Fig. 1–4. *Chiropsis pictus*, Painted Chiropsis. Fig. 5–8. *Chiropsis guttatus*, Speckled Chiropsis, (Vol. X.)

PLATE XXXII.—Fig. 1–5. *Embiotoca perspicabilis*, The Sapphire Perch 357

PLATE XXXIII.—Fig. 1–5. *Damalichthys vacca*, Silvery Perch 358

PLATE XLII.—Fig. 1–3. *Pimelodus olivaceus*, Olive Colored Cat Fish. Fig. 4–6. *Pimelodus catulus*, Kitten Fish 359

PLATE XLIV.—Fig. 1–3. *Pimelodus ailurus*, Blunt-tailed Cat Fish 359

PLATE XLV.—Fig. 1–4. *Mylocheilus fraterculus*. Fig. 5–8. *Mylocheilus lateralis* 359

PLATE L.—Fig. 1–4. *Acomus lactarius*, Milk River Sucker. Fig. 5. *Young of the same* 360

PLATE LI.—Fig. 1–4. *Catostomus sucklii*, Nebraska Sucker. Fig. 5. *Young of the same* 360

PLATE LV.—Fig. 1–6. *Pogonichthys communis*, Nebraska Dace, (Vol. X, p. 247.)

PLATE LX.—Fig. 1–4. *Richardsonius balteatus*, Steilacoom Killy. Fig. 5–8. *R. lateralis*, Spotted Killy 36

PLATE LXIII.—Fig. 1–5. *Cheonda cooperi*, Vancouver Chub Fig. 6–9. *Cyprinoid (undetermined)* 362

PLATE LXVII.—Fig. 1–4. *Salmo quinnat*, (young,) Quinnat Salmon 321

PLATE LXIX.—Fig. 1–4. *Salmo gibbsii*, (*T. tsuppitch*, GRD.,) Gibbs' Salmon Trout 332

Fig. 5–8. *Salmo stellatus*, Star-spotted Brook Trout 346

PLATE LXXII.—Fig. 1–4. *Salar lewisii*, Lewis' Missouri Trout 349

PLATE LXXVI.—Fig. 1–4. *Thaleichthys pacificus*, The Eulachon 349

Fig. 5–8. *Osmerus pretiosus*, Pacific Smelt, (Vol. X, p. 324.)

NOTE.—Figures of the following species will be found in other volumes. In volume VI:

PLATE XXII*b*.—Fig. 5, 6. *Artedius notospilotus*, Ayre's Sculpin 353

PLATE XXV*b*.—Fig. 6, 7. *Gunnellus ornatus*, Banded Mud Fish 355

In Volume X:

PLATE XXV*b*.—Fig. 4, 5. *Cebidichthys violaceus*, Violet Monkey Fish 355

PLATE XXV*b*.—Fig. 1–3. *Lumpenus anguillaris*, Eel-shaped Lumpenus 356

PLATE VIII.—Fig. 1–4. *Pomotis luna*, Northern or Moon Sunfish 350

PLATE XVII.—Fig. 5, 6. *Zaniolepis latipinnis*, Rough-skin Sculpin 353

PLATE XXIII.—*Amblodon grunniens*, Buffalo or Grunting Perch 355

PLATE XXV.—*Porichthys notatus*, Porous Cat-Fish 356

PLATES XXXV, XXXVI, Fig. 1–4; PLATE XXVI, Fig. 7–8, young.—*Holconotus rhodoterus*, Golden Barred Perch 358

PLATE XLVIII.—Fig. 1–4. *Carpiodes damalis*, Deer-nosed Carp 359

PLATE LIII.—Fig. 5–8. *Hybognathus argyritis*, Silvery Minnow 361

PLATE LXIV.—Fig. 5–9. *Ptychocheilus oregonensis*, Oregon Carp 363

PLATE LXX.—*Fario argyreus*, Satsup Salmon 326

PLATE LXXI.—Fig. 5–8. *Salmo masoni*, (*Fario clarkii*, GRD.,) Mason's Trout 345

PLATE LXXV.—Fig. 5–7. *Meletta coerulea*, Puget's Sound Herring 363

PLATE LXXV.—Fig. 1–4. *Hyodon tergisus*, Missouri Herring 364

PLATE XXIX—Fig. 5–9. *Gobio gelidus* will be found in United States and Mexican Boundary Fishes 361

No. 1.

REPORT UPON INSECTS COLLECTED ON THE SURVEY.

BY JOHN T. LECONTE, M.D.

INTRODUCTORY REMARKS.

As early as the year 1829, many Coleoptera of the western coast of North America were made known by Eschscholtz, in his Zoological Atlas. This work was intended to contain descriptions of the copious scientific treasures collected by him during the voyages of Captain Kotzebue, of the Imperial Russian navy, during the years 1823–'26, and the results of the expedition, as well as the promptness with which they were made known, afford a lasting monument of the liberal policy pursued by the Russian government in the encouragement of intellectual pursuits, which, though not immediately connected with physical prosperity, are yet an unfailing standard of mental elevation.

The death of Eschscholtz unfortunately prevented the completion of the work; and from want of opportunity, his collections remained undescribed for several years. In the meantime, in 1843, Mannerheim published a Coleopterous fauna of California and Russian America, which contained descriptions of three hundred species. This was followed, at intervals, by three supplements, devoted to the Coleoptera of Russian America; and by the last of these, published in 1853, the total number of species known from that part of the continent was brought up to 540 species; and by his labors, that portion of the fauna has indeed been more completely developed than that of any other part of this continent. Papers by Motschulsky, also published, like those of Mannerheim, in the Bulletin of the Imperial Society of Naturalists of Moscow, contain valuable additions to the entomology of Pacific North America.

Our knowledge of the Coleoptera of Oregon and Washington Territories is still less complete, and with the exception of a few species collected by Dr. J. K. Townsend, and described by Harris, Erichson, Germar, and Reiche, consists of new material obtained almost entirely through the influence of the enterprising and zealous naturalists, Drs. Cooper and Suckley, of the present expedition. To George Gibbs, esq., of Steilacoom, I am deeply indebted for a beautiful collection, which, through the kindness of Dr. Suckley, arrived in time to be incorporated in the report. To Colonel George A. McCall, late Inspector General U. S. A., I owe my warmest acknowledgements for a valuable series collected by him while performing his official duties in Oregon.

Many years ago I examined the collection of Coleoptera made by Dr. Pickering and Mr. Titian Peale, during the expedition of the Peacock and Vincennes, under Captain Charles Wilkes, U. S. N. Among them were a considerable proportion of species found in Oregon and California, which at that time were new. The report has not been published; but on looking over the notes made at the time by me, I find that there are in the collection very few species that have not since been obtained from other sources, and which are, therefore, comprised in the catalogue here given.

Nearly one half of the species found in Russian America have become known to me by the kind exertions of my scientific friends, Baron Chaudoir and Colonel Motschulsky; and to the latter I am indebted for his careful comparison of a set of the Californian Coleoptera collected by me, with the original types of Eschscholtz, Mannerheim, and Ménétriés, by which I have been enabled greatly to increase the accuracy of my investigations.

The species which remain unknown to me are marked in the catalogue with an inverted comma before the locality, to show that they are placed in the catalogue on the authority of other writers.

The materials present, for actual investigation, in compiling this report, are therefore:

1. A series of more than two hundred species from Russian America, examined and named by Count Mannerheim, sent me by Baron Chaudoir.

2. A smaller series, containing similar species, together with some Californian types of Eschscholtz, sent me by Colonel Motschulsky.

3. About fifty species collected by the late J. K. Townsend, M. D., in Oregon, and given me by Mr. Edwin Willcox.

4. A collection made at Fort Vancouver, by Colonel McCall.

5. The collections of Dr. Cooper, made in various parts of Oregon, but chiefly at Vancouver and Shoalwater bay.

6. The collections of Dr. Suckley, made principally at Steilacoom.

7. A collection made by George Gibbs, esq., at Steilacoom.

8. The collections made by myself, at San Francisco and San Jose.

9. Two collections made in the valley of the Sacramento by Mr. J. Wittick, and presented to me by S. S. Rathvon, esq., of Lancaster, Pennsylvania.

10. Two collections made, the one in the Sacramento valley, the other at San Francisco, by Mr. J. Child, also given me by Mr. Rathvon.

11. A small but valuable collection from the vicinity of San Francisco, given me by Mr. J. P. Wild, of Baltimore.

The Staphylinidae are represented in the catalogue by species previously described; the new species collected by me are so numerous, and frequently so closely allied to species of the Atlantic slope of the continent, which are also undescribed, that it appears to me of no advantage to science to make them known separately, but rather to await the opportunity of time to place them in a general synopsis of the Staphylinidae of the United States by genera and tribes. I have, however, made use of them in constructing the tables of distribution of genera, numbered I and II.

Several Curculionidae in my collection have not been described, for the reason that, with the arrangement given by Schönherr in his '*Genera et Species Curculionidum*,' I am quite unable to refer them to appropriate genera, while the specific characters do not appear sufficiently remarkable to render them easily identified.

The collections of Drs. Cooper and Suckley, as made during the survey of the 47th parallel, were placed in my hands for examination by the Smithsonian Institution, to which I am also under great obligations, for the opportunity of examining many other North American insects.

The distribution of species in the northern part of the region which furnishes the materials for this report, presents no remarkable phenomenon. As in other northern lands, certain tribes like Adephaga, Staphylinidae, and Elateridae assume a greater preponderance in the fauna, from the fading out of the groups more characteristic of warmer climates, while a greater

number of species are found common to both continents. Of these latter, about one half are found on the Atlantic slope of America, while the other half have not yet occurred there.

The number of species occuring on both sides of America is also largely increased in these northern regions, but with the exception of Epiphanis cornutus and Priognathus monilicornis, the genera of such species are distributed on both continents.

On proceeding southwards to Oregon (and Washington Territory, which is, for purposes of convenience, always included when Oregon is referred to in these pages) similar phenomena may be observed, though on a diminished scale. The species of the eastern continent, not found on the Atlantic slope of America, have entirely vanished, and of the species common to both sides of both continents, but four remain. The number of species common to the Atlantic and Pacific slopes of America has greatly diminished, and among them *Haplochile pygmaea*, *Ligyrus gibbosus*, *Alaus myops*, and *Microrhopala vittata* are the only representatives of American genera.

Finally reaching California, the species common to the two continents are reduced to *Silpha lapponica* and *Dermestes vulpinus*, the species common to Atlantic and Pacific America have not diminished absolutely in number, but from the more complete and copious fauna known to us their relative proportion is much lessened. Among them, however, are found but few which extend their range to the Atlantic States proper, while the greater proportion are not found east of Kansas. Of American genera, *Amblychila cylindriformis*, *Lachnophorus elegantulus*, and *Eurymetopon atrum* are found in Kansas, or New Mexico, while *Ligyrus gibbosus* and two species of *Diabrotica* also extend to the Atlantic.

Having thus passed in rapid review the distribution of species, as illustrated by tables III and IV, the much more important subject of the distribution of genera remains to be considered. The phenomena afforded by the study of seven of the most numerous families, I have endeavored to express in a numerical form in tables I and II.

In Russian America the genera seem to follow to a certain extent the course already pointed out of the species, that is: the genera common to both continents have a much greater relative proportion, and among them a by no means insignificant part have not yet been found in Atlantic America; but as some of them are characteristic of high northern latitudes, there is reason to believe that the number will be reduced by more thorough explorations in Labrador, Newfoundland, and the regions near Hudson's Bay.

Of genera confined to America, but six or seven occur in Russian America; of these but three, Pristodactyla, Epiphanis, and Priognathus, have been detected on the Atlantic slope. Pristodactyla might, indeed, be for the present excluded from the list of peculiar American genera, for two reasons: 1, a certain number of species classed by Dejean, with Agonum, and remarkable for having but two dorsal punctures, are in reality Pristodactylae, and until the species of Siberia are thoroughly revised, we are warranted in supposing that some of them may also be included; but, 2, because the distinctions between Calathus and Pristodactyla, as observed by Lacordaire, are hardly sufficient to warrant the retention of the latter genus.

In Oregon the eastern genera, not found in the Atlantic States, have diminished in number, but among them occurs Callisthenes, which is found in Kansas. The number of American genera has largely increased, even with our limited collections; of them 14 are found in the Atlantic States, 2 in Kansas, while 8 are peculiar to Pacific America; of the 14 found in the Atlantic States, Haplochile, Dichelonycha, Anelastes, and Alaus are the only ones not found within the tropics.

In California the genera of the eastern continent have increased absolutely, from more extensive collections, over those found in Oregon, but do not attain the same relative proportion as those found in Russian America; among them is one, Tryssus, a genus heretofore known only from Madagascar, and is thus far the sole representative of the tribe of Scarabaeidae, to which it belongs on this continent.

The number of American genera has greatly increased, partly by the addition of genera found within the tropics, and partly by the introduction of a few peculiar genera; the most remarkable addition, however, is that of eighteen genera of Tenebrionidae, of which but two, Nosoderma and Blapstinus, extend into the Atlantic States, while only four others extend into Kansas or New Mexico. The genera found in the Atlantic States, and not in the tropics, are Thalpius, Axinopalpus, Dichelonycha, Anelastes, Perothops, and Melanactes.

Another fact of great interest is the distribution of species within narrow limits observed in California. I am not able to exhibit the results in a tabular form, as collections have not been made with minuteness at a sufficient number of localities to give any definite results, but I can merely state my own experience, that but few species occurred at more than one place, and call attention to the fact that, in every collection made at a fresh locality, a large proportion of new species is found, while in Oregon, at points equally distant from each other, a greater uniformity is seen.

The analysis, therefore, conducts to the same results announced by me, in 1851, at the meeting of the American Association for the Advancement of Science; the fourth proposition was, unfortunately, announced in too absolute terms, as the only two genera then known to me, Thalpius and Axinopalpus, were not considered as of sufficient importance to modify the result. Thalpius, indeed, is so closely allied to Diaphorus, that we may well expect some of the species of the latter genus to belong to it, while Axinopalpus is by many entomologists not separated from Dromius. The other four American genera common to California and Atlantic America, not found in the tropics—Dichelonycha, Anelastes, Perothops, and Melanactes—upon which I am now obliged to modify the assertion, were subsequently obtained.

The four propositions stated by me in the essay mentioned are:

1. California constitutes a peculiar zoological district, with sufficient relation to the other districts of America to prove that it belongs to the same continental system.

2. This zoological district is divided into several sharply defined sub-districts, having a very close resemblance to each other.

As the same mode of distribution obtains in the groups of islands adjacent to the western coast of America, we are led to believe—

3. That the local distribution of a small number of species is the characteristic of the eastern Pacific region, as the extensive distribution of a large number is the prevailing feature of the Atlantic basin.

4. The genera occurring in, but not peculiar to, this district belong to two classes: either (with the exception of Ergates) they occur on the Atlantic slope of both continents, or, if peculiar to America, they are (with the few exceptions above noted) also found within the tropics.

[Note.—The Coleoptera collected by me at San Diego and other localities in the southern part of California have not been included in this report, as they more properly belong to the fauna of the Mexican Boundary, and will be contained in the report of the survey made by the Boundary Commission.]

TABLE I.—*Genera common to the Eastern and Western Continents.*

Names of families.	Total number of Genera.	Russian America.		Oregon.		California.	
		In Atlantic States.		In Atlantic States.		In Atlantic States.	
Adephaga	46	27	4	25	2	35 + 2 ?[1]	1
Silphales	11	8	3	2	1	3	1
Staphylinidae	42	25	5	Not collec.	----------	30	----------
Scarabaeidae	9	2	----------	4	----------	7 + 1[2]	1
Elateridae	9	5	----------	9	----------	7	----------
Tenebrionidae	6	1	----------	3	----------	4	1
Cerambycidae	17	11	1	13	2	10	2
Chrysomelidae	16	6	----------	10	1	13	1

[1] Calleida, Patrobus.

[2] Sinodendron: a species from the Atlantic States, is described by Beauvois.

The genera of the above table, which have not been found in the Atlantic States, are:

In Russian America.—Miscodera, Leistus, Pelophila, Trachypachys, Necrophilus, Sphaerites, Lyrosoma, Bolitochara, Syntomium, Phloeonaeus, Arpedium, Deliphrum, Rosalia.

In Oregon.—Callisthenes, Trachypachys, Necrophilus, Ergates, Rosalia, Timarcha.

In California.—Anillus, Necrophilus, Tryssus, Calcar, Ergates, Mesosa, Timarcha.

TABLE II.—*Genera peculiar to America.*

Names of families.	Total number of Genera.	Russian America.			Oregon.			California.		
		In Atlantic States.	Not in Atlantic States.		In Atlantic States.	Not in Atlantic States.		In Atlantic States.	Not in Atlantic States.	
			A.	B.		A.	B.		A.	B.
Adep aga	18	1	--------	--------	2	--------	3	6 + 1 ?	1	7
Staphylinidae	2	--------	--------	1 + 1 ?	Not col.	Not col.	--------	--------	--------	1
Scarabaeidae	7	--------	--------	--------	4	--------	--------	6	--------	1
Elateridae	8	1	--------	--------	3	--------	--------	4	--------	1
Tenebrionidae	19	--------	--------	1	2	2	1	2	4[3]	12
Cerambycidae	6	--------	--------	2	1	--------	4	1	--------	1 ?[4]
Chrysomelidae	4	--------	--------	--------	2	--------	--------	4	--------	--------

[3] Triorophus, Eurymetopon, Eleodes, Coniontis.

[4] Oenemona?

The columns headed A contain genera found in the central desert regions of Kansas, New Mexico, and Texas, although not extending into the Atlantic region proper. Those headed B, therefore, contain the genera peculiar to the Pacific slope.

The genera of the above table which are found in the Atlantic States, are:

In Russian America.—Pristodactyla, Epiphanis.

In Oregon.—Anisodactylus, Haplochile, Ligyrus, Diplotaxis, Dichelonycha, Canthon, Anelastes, Alaus, Asaphes, Nosoderma, Blapstinus, Tetraopes, Saxinis, Microrhopala.

In California.—Diaphorus, Thalpius, Lachnophorus, Casnonia, Axinopalpus, Anisodactylus, Pasimachus? Ligyrus, Cremastochilus, Diplotaxis, Dichelonycha, Camptorhina, Canthon, Anelastes, Perothops, Monocrepidius, Melanactes, Nosoderma, Blapstinus, Tetraopes, Chlamys, Saxinis, Diabrotica, Microrhopala.

TABLE III.—*Species common to the Atlantic and Pacific slopes of the continent.*

NOTE.—The species are divided into three sets, according to locality; those which are found in two of the sets are noted by the number corresponding to the number of the set in which they occur. Species found in the interior regions—Kansas, New Mexico, and Upper Texas—are noted with a (C.) Those found in Europe, (E.)

1. *Species found in Russian America.*

Platynus octocolus.	Hydnobius punctostriatus.	Xyloterus bevittatus.
Platynus bembidioides.	Aleochara bimaculata, 3.	Bostrichus septentrionis.
Pterostichus orinomum, (E.) 2.	Philonthus aterrimus, (E.)	Tetropium cinnamopterum.
Amara impuncticollis.	Quedius molochinus, (E.)	Semanotus Proteus.
Ochthedromus bimaculatus.	Ips Dejeanii.	Leptura vexatrix.
Elaphrus californicus, 3.	Dermestes vulpinus, (E.) 2, 3.	Leptura liturata.
Laccophilus truncatus, (C.)	Byrrhus cyclophorus.	Monohammus scutellatus, 2.
Hydroporus griseostriatus, (E.)	Chrysobothris trinervia, 2.	Eumolpus vitis, (E.)
Agabus phaeopterus.	Epiphanis cornutus.	Hippodamia 13-punctata, (E.) 2.
Agabus bicolor.	Clerus undulatus.	Hippodamia parenthesis.
Agabus semipunctatus.	Priognathus monilicornis.	Coccinella 12-maculata, (E.)
Ilybius picipes, 2.	Lepidophorus lineaticollis.	Coccinella trifasciata, (E.)
Dytiscus confluens.	Lepyrus gemellus.	Coccinella transversoguttata, (E.)
Dytiscus anxius, 2, 3.	Hylurgus rufipennis.	
Silpha lapponica, (E.) 2, 3.	Hylesinus rufipennis.	

2. *Species found in Oregon.*

Cicindela vulgaris.	Ligyrus gibbosus.	Rhyncites bicolor, 3.
Pterostichus orinomum, (E.) 1.	Polyphylla 10-lineata, (C.) 3.	Tetropium cinnamopterum.
Chlaenius sericeus.	Ancylochira rusticorum, 3.	Clytus undulatus.
Haplochile pygmaea.	Chrysobothris femorata?	Monohammus scutellatus, 1.
Calosoma calidum.	Chrysobothris trinervia, 1.	Chrysomela scripta.
Laccophilus truncatus, (C.) 1, 3.	Elater phoenicopterus.	Chrysomela Bigsbyana.
Dytiscus anxius, (C.) 1, 3.	Adelocera aurorata.	Galleruca canadensis.
Silpha lapponica, (E.) 1, 3.	Alaus myops.	Microrhopala vittata.
Silpha ramosa, (C.) 3.	Ellychnia corrusca?	Anisosticta vittigera, (C.) 3.
Saprinus lugens, (C.) 3.	Trichodes ornatus, (C.) 3.	Coccinella trifasciata, (E.)
Saprinus oregonensis, (C.) 3.	Clerus sphegeus, (C.) 3.	Hippodamia 13-punctata, (E.)
Nitidula ziczac.	Serropalpus substriatus.	

3. *Species found in California.*

Amblychila cylindriformis, (C.)	Silpha ramosa, (C.) 2.	Eurymetopon atrum, (C.)
Lachnophorus elegantulus, (C.)	Staphylinus villosus.	Cistela sericea?
Elaphrus californicus.	Hister immunis.	Mordella scutellaris.
Hydroporus striatellus, (C.)	Saprinus lugens, (C.) 2.	Rhyncites bicolor, 2.
Hydroporus parallelus, (C.)	Saprinus oregonensis, (C.) 2.	Centrinus confusus?
Hydroporus vilis, (C.)	Phalacrus penicellatus, (C.)	Tetropium cinnamopterum, 1, 2.
Laccophilus truncatus, (C.) 1, 2.	Dermestes vulpinus, (E.) 1, 2.	Diabrotica 12-punctata.
Dytiscus anxius, (C.) 1, 2.	Ligyrus gibbosus, 2.	Diabrotica vittata.
Hydrophilus triangularis.	Polyphylla 10-lineata, (C.) 2.	Anisosticta vittigera, (C.) 2.
Philhydrus diffusus, (C.)	Ancylochira rusticorum, 2.	Coccinella abdominalis.
Necrophorus marginatus.	Trichodes ornatus, (C.) 2.	
Silpha lapponica, (E.) 1, 2.	Clerus sphegeus, (C.) 2.	

TABLE IV.—*Species found in Russian America and in the eastern continent, not introduced and not found in Atlantic America.*

Platynus Bogemanni.	Olisthaerus megacephalus.	Dinoderus substriatus.
Carabus vietinghovii.	Elater nigrinus.	Serropalpus striatus.
Colymbetes dolabratus.	Corymbites confluens.	Chrysomela lapponica.
Necrophorus mortuorum.	Helodes variabilis?	Chrysomela viminalis.

LIST OF SPECIES.

CICINDELIDAE.

Omus Esch.

californicus *Esch.*, (infra)---Cal.
Audouini *Reiche*, (infra)---Or.
Dejeanii *Reiche*, (infra)---Or.

Amblychila Say.

cylindriformis *Say*---'Cal.
Piccolominii Reiche.

Cicindela Linn.

vulgaris *Say*, (var. viridis)---Or.
obliquata Dej.

oregona *Lec.*---Or. Cal.
n. sp., indeterm.---Or.
californica *Ménétriés*---'Cal.
? *tenuisignata* Lec.

CARABIDAE.

Brachinus Weber.

Tschernikhii *Mann.*---Cal.

Galerita Fabr.

californica *Mann.*---Cal.

Diaphorus Dej.

tenuicollis *Lec.*---Cal.

Thalpius Lec.

rufulus *Lec.*, Trans. Am. Phil. Soc., x, 373.---Cal.
Enaphorus rufulus Lec.

Lachnophorus Dej.

elegantulus *Mann.*---Cal.
Tachypus mediosignatus Mén.

Casnonia Latr.

picta *Chaud.*---'Cal.

Lebia Latr.

cyanipennis *Dej.*---Cal.
cyanella *Lec.*---Cal.
Lamprias cyanellus Motsch. Car. Russl., 42.

Metabletus Schmidt.

nigrinus *Lec.*---Cal.
Dromius nigrinus Mann.
Bomius nigrinus Lec.

Axinopalpu Lec.

fusciceps *Lec.*---Cal.
californicus *Lec.*---Cal.
Dromius californicus Motsch.

Calleida Dej.

croceicollis *Ménét.*---'Cal.
var. *Calleida chloridipennis* Motsch., Car. Russl. 39.
? *Philotecnus ruficollis* Lec.

Philotecnus Lec.

ruficollis *Lec.*---Cal.
nigricollis *Lec.*---Cal.
? *Calleida cyanea* Motsch. Car. Russl., 39.

Cymindis Latr.

viridis *Dej.*, Sp. Gen. 5,325, Mann. Bull. Mosc. 1843, 183.---'Cal.

Trechus Clairv.

spectabilis *Mann.* Bull. Mosc. 1852---'R.
chalybeus *Dej.*---R.
oblongulus *Mann.*---'R.
ovipennis *Motsch.*---R. Cal.
californicus *Motsch.*---R.

Tachys Lec.

rivularis *Motsch.* Mann. Bull. Mosc. 1853.---'R.

Calathus Bon.

ruficollis *Dej.*---Cal.
Berensii *Mann.*---'Cal.
quadricollis *Lec.* Proc. Acad. Nat. Sc. vii, 37---Cal.
ingratus *Dej.*---R.
incommodus *Mann.*---R.
Vix a præced. differt.

Pristodactyla Dej.

lenis *Lec.*---R.
Anchomenus lenis Mann. Bull. Mosc. 1853.
mollis *Lec.*---R.
Agonum molle Dej.
? dulcis *Mann.* (Anchomenus) B. M. 1853---'R.

Platynus Bon. (emend. Brullé.)

cinctellus *Lec.* Proc. Acad. Nat. Sc. 7, 37---Cal.
maurus *Motsch.* (Anchomenus)---'Cal.
ovipennis *Mann.* (Anchomenus)---'Cal.
Anchomenus rotundipennis Motsch.
rugiceps *Mann.* (Anchomenus)---'Cal.
Anchomenus ovipennis Motsch.
brunneomarginatus *Mann.* (Anchom.)---'Cal.
micans *Lec.*---Cal.

Anchomenus micans Mēn.
Scaphiodactylus micans Chaud.
›neolus *Lec.* Proc. Acad. Nat. Sc. 7, 45 ---Or.
californicus *Lec.* Proc. Acad. Nat. Sc. 7, 47 ---Cal.
Anchomenus californicus Dej.
ferruginosus *Dej.* (Anchomenus)---'Cal.
frater *Lec.* Proc. Acad. Nat. Sc. 7, 49---Cal.
quadratus *Lec.* ibid. 7, 50---Or.
maculicollis *Lec.*---Cal.
Agonum maculicollis Dej.
Anchomenus maculicollis Mann.
variolatus *Lec.* Proc. Acad. Nat. Sc. 7, 56 ---Cal.
Agonum limbatum ‖ Motsch.
deplanatus *Lec.*---Cal.
Agonum deplanatum Mén.
brevicollis *Dej.* (Agonum)---'Cal.
fossiger *Lec.*---Cal. Or.
Agonum fossiger Dej.
Anchomenus fossiger Mann.
famelicus *Ménétr.* (Agonum)---'Cal.
strigicollis *Lec.*---R. Or.
Anchomenus strigicollis Mann.
Bogemanni---'R.
Harpalus Bogemanni Gyll.
Agonum Bogemanni Dej.
Anchomenus Bogemanni Mann. Bull. Mosc. 1853.
octocolus *Mann.* (Anchom.) B. Mosc. 1853---'R.
? *Platynus stigmosus* Lec. Proc. Acad. 7, 58.
bembidioides *Lec.* Proc. Acad. 7, 57 ---'R.
Sericoda bembidioides Kirby.
Anchomenus bembidioides Mann. Bull. Mosc. 1853.
gratiosus *Mann.* (Anchomenus) ibid. 1853---'R.
fragilis *Mann.* (Anchom.) ibid. 1853---'R.
exaratus *Mann.* (Anchom.) ibid. 1853---'R.
striatus *Dej.* (Anchom.)---'Cal.
sulcatus *Dej.* (Anchom.) ---'Cal.

PTEROSTICHUS Bon. (emend. Er.)

contractus *Lec.* Journ. Acad. Nat. Sc. 2nd ser. 2, 237---Cal.
congestus *Mén.* (Feronia)---'Cal.
castanipes *Mén.* (Feronia) ---'Cal.
Menetriesi *Motsch.* (Brachystylus)---'Cal.
Brachystylus megas Chaud.
Pterostichus ater ‡ Mén.
herculaneus *Mann.*---'R.
validus *Mann.*---R.
Feronia valida Dej.
vicinus *Mann.* ---Cal.
Pterostichus californicus ‡ Lec. (fide Chaudoir)
muticus *Lec.*---Cal.
californicus *Mann.* ---Cal.
Feronia californica Dej.
Pterostichus simplex Lec.
planctus *Lec.* Journ. Acad. 2nd ser. 2, 239---Or. Cal.
algidus *Lec.* ibid. 2, 239 ---Or.
amethystinus *Mann.*---R. Or.
castaneus *Mann.*---R.
Feronia castanea Dej.
brunneus *Mann.*---
Feronia brunnea Dej.
angustus *Mann.*---Cal.
Feronia angusta Dej.
Pterostichus linearis Lec. (fide Chaudoir.)
longicollis *Lec.* Journ. Acad. 2nd ser. 2, 239 ---Or.
fatuus *Lec.* ---R.
Cryobius fatuus Mann. Bull. Mosc. 1853.
riparius *Mann.* ---R.
Feronia riparia Dej.
vindicatus *Lec.*---R.
Cryobius vindicatus Mann. B. M. 1853.
hyperboreus *Mann.* (Cryobius) ibid. ---'R.
subexaratus *Mann.* (Cryobius) ibid.---'R.
ventricosus *Mann.* ---R.
Poecilus ventricosus Esch.
Feronia ventricosa Dej.
pinguedineus *Mann*---R.
Poecilus pinguedineus Esch.
Feronia pinguedinea Dej.
empetricola *Mann.*---R.
Feronia empetricola Dej.
subcaudatus *Lec.* ---R.
Cryobius subcaudatus Mann. B. M. 1853.
fastidiosus *Lec.* ---R.
Cryobius fastidiosus Mann. ibid. 1853.
rugulosus *Mann.* (Cryobius) ibid. 1852---'R.
similis *Mann.* (Cryobius) ibid. 1852 ---'R.
ruficollis *Mann.* (Cryobius) ibid. 1853---'R.
rotundicollis *Mann.* (Cryobius) ibid. 1853 ---'R.
quadricollis *Mann.* (Cryobius) ibid. 1853 ---'R.
lustrans *Lec.* Jour. Acad. 2nd ser. 2, 241---Or. Cal.
linearis *Mann.* (Argutor) B. M. 1853 ---'R.
rufiscapus *Mann.* (Omaseus) ibid. 1853---'R.
fusco-aeneus *Mann*---'R.
Omaseus fusco-aeneus Chaud.
vitreus, *Lec.*---R.
Feronia vitrea Dej.
orinomum *Lec.* ---R. Or.
Omaseus orinomum Kirby.
Bothriopterus orinomum Mann. B. M. 1852.
adstrictus *Esch.* ---R.
Feronia adstricta Dej.
commixtus *Chaud.* (Bothriopterus) ---'R.
sexpunctatus *Lec.* ---R.
Bothriopterus sexpunctatus Mann.
seriepunctatus *Mann.* ---R.

HOLCIOPHORUS Lec.

ater *Lec.* Journ. Acad. Nat. Sc. 2nd ser. 2, 250 ----Or. Cal.
Feronia atra Dej.
Pterostichus ater Mann.
Feronia lama Ménétr.
Pterostichus aterrimus Motsch.

POECILUS Bon.

occidentalis *Lec.* Journ. Acad. Nat. Sc. 2nd., 2, 253 ---Cal.
Feronia occidentalis Dej. (fide Chaud.)
Pterostichus occidentalis Mann.

AMARA Bon.

stupida *Lec.* Proc. Acad. Nat. Sc. 7, 347 ---Cal.
infausta *Lec.* ibid. ---R.

Leirus rufimanus ‖ Motsch.
Leirus carinatus ‡ Mann.
melanogastrica *Dej.* ..... R.
Eschscholtzii *Lec.* ..... R.
Leirus Eschscholtzii Chaud.
obtusa *Lec.* Proc. Acad. 7, 348 ..... R.
Amara Eschscholtzii Mann.
oregona *Lec.* Proc. Acad. 7, 349 ..... Or.
glacialis *Mann.* (Bradytus) B. M. 1853 ..... 'R.
scitula *Zimm.* ..... Cal.
longula *Lec.* Proc. Acad. Nat. Sc. 7, 350 ..... Cal.
insignis *Dej.* ..... Or. Cal.
impuncticollis *Say*, (fide Mann. B. M. 1853) ..... 'R.
littoralis *Mann?* *Lec.* Proc. Acad. 7, 351 ..... R.
inepta *Lec.* Proc. Acad. 7, 351 ..... Or.
conflata *Lec.* ibid. ..... Cal.
erratica *Sturm.* (fide Mann.) ..... 'R.
Celia erratica Zimm.
Amara punctulata Dej.
californica *Dej.* ..... Cal.
remotestriata *Dej.* ..... R.
Celia remota Zimm.
Celia relucens Mann.
amplicollis *Mann.* (Celia) Bull. Mosc. 1853 ..... 'R.
indistincta *Mann.* (Celia) ibid. 1853 ..... 'R.
rectangula *Lec.* Proc. Acad. 7, 353 ..... Or.
aurata *Dej.* ..... Cal.

AGAOSOMA Ménétr.

californicum *Ménétr.*, (infra). ..... Cal.
Stenomorphus californicus Chaud.

ANISODACTYLUS Dej.

dilatatus *Lec.* Trans. Am. Phil. Soc. 10, 383 ..... Cal.
Harpalus dilatatus Dej.
Dicheirus dilatatus Mann.
brunneus *Dej.* (Harpalus) ..... 'Cal.
obtusus *Lec.* ..... Cal.
Dicheirus obtusus Lec.
hirsutus *Ménétr.* (Diplocheirus) ..... 'Cal.
villosus *Motsch.* (Dicheirus) ..... 'Cal.
irregularis *Motsch.* (Dicheirus) ..... 'Cal.
piceus *Lec.* ..... Cal.
Diplocheirus piceus Ménétr.
Dicheirus parallelus Lec.
consobrinus *Lec.* ..... Or. Cal.
confusus Lec.
californicus *Dej.* ..... Or. Cal.
similis *Lec.* ..... Or.
alternans *Lec.* ..... Cal.
amaroides *Lec.* ..... Cal.

BRADYCELLUS Er.

obesulus *Lec.* Trans. Am. Phil. Soc. 10, 385 ..... Or.
Harpalus obesulus Lec. Ann. Lyc. 5, 185.
nigrinus *Lec.* ..... R.
Harpalus nigrinus Dej.
axillaris *Lec.* ..... R.
Acupalpus axillaris Mann. B. M. 1853.
longiusculus *Lec.* ..... R.
Acupalpus longiusculus Mann. ibid.
conflagratus *Mann.* (Acupalpus) ibid ..... 'R.
nitidus *Mann.* ..... Cal.
Acupalpus nitidus Dej.

HARPALUS Latr.

fraternus *Lec.* ..... Or.
fulvilabris *Mann.* ..... R. Or.
curtatus *Mann.* ..... 'R.
albionicus *Mann.* ..... 'Cal.
cautus *Dej.* ..... Or. Cal.
advena *Lec.* ..... Or.
somnolentus *Dej.* ..... R.
hirsutus *Ménétr.* ..... 'Cal.
alternans *Motsch.* ..... 'Cal.
porosus *Motsch.* (Ophonus) ..... 'Cal.

STENOLOPHUS Dej.

limbalis *Lec.* (infra) ..... Cal.
anceps *Lec.* (infra) ..... Cal.
unicolor *Dej.* ..... Cal.
tener *Lec.* (infra) ..... Cal.
californicus *Lec.* (infra) ..... Cal.
symmetricus *Motsch.* Car. Russl. 23 ..... Cal.

BADISTER Clairv.

ferrugineus *Dej.* ..... 'Cal.

CHLAENIUS Bon.

viridifrons *Esch.* ..... 'Cal.
sericeus *Say.* ..... Or.
Carabus sericeus Forster.
Chlaenius perviridis Lec.
variabilipes *Esch.* ..... 'Cal.
an C. asperulus Ménétr.?
asperulus *Ménétr.* ..... Cal.
obscurus Lec.
harpalinus *Esch.* ..... Cal.
pubescens ‡ *Mann.* ..... 'Cal.

PASIMACHUS Bon.

californicus *Chaud.* ..... 'Cal.

CLIVINA Latr.

punctulata *Lec.* ..... Cal.

DYSCHIRIUS Bon.

transmarinus *Mann.* B. M. 1853. ..... 'R.
frigidus *Mann.* ibid. ..... 'R.
consobrinus *Lec.* ..... Cal.

HAPLOCHILE *Lec.*

pygmaea *Lec.* ..... Or.
Morio pygmaeus Dej.

MISCODERA Esch.

insignis *Mann.* B. M. 1852. ..... 'R.
americana *Mann.* B. M. 1853. ..... 'R.

METRIUS Esch.

contractus *Esch.* ..... Cal.

PROMECOGNATHUS Chaud.

laevissimus *Chaud.* (infra)---Cal.

ANILLUS Duval.

debilis *Lec.* Trans. Am. Phil. Soc. 10, 397---Cal.

OCHTHEDROMUS Lec.

indistinctus *Lec.*---Cal.
Bembidium indistinctum Mann.
glabriusculus Mann. (Bembid.) B. M. 1853---'R.
nigripes *Mann.* ‡ (Notaphus) B. M. 1852---R.
undulatus *Sturm.* (Bembid.)---'R.
Notaphus undulatus Mann. B. M. 1853.
quadraticollis *Mann.* (Notaphus) ibid.---'R.
Mannerheimii *Lec.*---Cal.
Bembidium transversale ‡ Mann.
pictus *Lec.*---Cal.
bimaculatus *Lec.*---'R.
Peryphus bimaculatus Kirby; Mann. B. M. 1853.
lucidus *Lec.*---R.
nitens *Lec.*---R.
Peryphus picipes ‡ Mann. B. M. 1853.
tetraglyptus *Mann.* (Peryphus) ibid.---'R.
complanulus *Lec.*---R.
Peryphus complanulus Mann. ibid.
incertus *Lec.*---R.
Notaphus incertus Motsch.
brevis *Motsch.* (Peryphus)---'R.
planiusculus *Lec.*---R.
Bembidium planiusculum Mann.
Kuprianovii *Mann.* (Bembidium)---'R.
Peryphus ovipennis Motsch.
biimpressus *Mann.* (Bembidium)---'R.
quadrifoveolatus *Mann.* (Bemb)---'R.
fortistriatus *Motsch.* (Omala)---'R.
politus *Motsch.* (Omala)---'Cal.
dubitans *Lec.*---Cal.
cruralis *Lec.*---Cal.
iridescens *Lec.*---Cal.
mundus *Lec.*---Cal.
? Lopha bifasciata Motsch. Car. Russl. 12.
angulifer *Lec.*---Cal.
connivens *Lec.*---Cal.
concolor *Motsch.* (Peryphus) Car. Russl. 9---'Cal.
elongatus *Mann.* (Tachypus) B. M. 1853---'R.

PATROBUS Dej.

fossifrons *Dej.*---R.
Platysma fossifrons Esch.
longiventris *Mann.* B. M. 1853---R.
fulvus *Mann.* ibid.---'R.
angusticollis *Mann.* ibid.---'R.
foveocollis *Dej.*---R.
Platysma foveocollis Esch.
aterrimus *Dej.*---R.
californicus *Motsch.* Mem. Acad. St. Petersb. 131, 1842---'Cal.

CYCHRUS Fabr.

velutinus *Ménétr.*---'Cal.
angusticollis *Fischer*---Or. R.
angulatus *Harris*---'Or.
cristatus *Harris*---'Or.
? reticulatus Motsch.---'R.
marginatus *Dej.*---Or. R.
ventricosus *Dej. Esch.*---Cal.
striatopunctatus Chaud.
interruptus *Ménétr.*---Cal.
ventricosus ‡ Chaud.
cordatus *Lec.* Trans. Am. Phil. Soc. 10, 399---Cal.
constrictus *Lec.* ibid. 10, 398---Cal.
tuberculatus *Harris* (infra)---Or.

CARABUS Linn.

Vietinghovii *Adams; Mann.* B. M. 1852---'R.
taedatus *Fabr.* (infra)---Or. R.
baccivorus Fischer.
seriatus Wiedemann.
oregonensis *Lec.* Proc. Acad. 7, 16 (infra)---Or.
Chamissonis *Fischer*---R.
brachyderus Wiedemann.
truncaticollis *Esch.* Zool. Atl. 5, 22---R.

CALOSOMA Fabr.

calidum ? *Fabr.* (infra)---Or.
tepidum *Lec.*---Or.
semilaeve *Lec.*---Cal.
cancellatum *Esch.* (infra)---Or. Cal.
aenescens Lec. Proc. Acad. 7, 16.
discors *Lec.* (infra)---Cal.

CALLISTHENES Fischer.

Zimmermanni *Lec.*---Or.
Carabus Zimmermanni Lec.
Wilkesi *Lec.*---Or.
moniliatus *Lec.*---Or.

LEISTUS Fröhl.

ferruginosus *Mann.*---R.
ferrugineus Esch. Dej.

NEBRIA Latr.

metallica *Fischer*---R.
Gebleri *Esch. Dej.*---'R.
gregaria *Fischer*---R.
Mannerheimii *Fischer*---R.
Sahlbergii *Fischer*---Cr. R.
Rathvoni *Lec.* Tr. Am. Phil. Soc. 10, 400---Cal.
bifaria *Mann.* B. M. 1853---'R.
carbonaria ‡ Mann.
Eschscholtzii *Ménétr.*---Cal.

PELOPHILA Dej.

californica *Motsch.* Mem. Acad. St. Petersb. 1842, 72---'Cal.
Eschscholtzii *Mann.*---R.

NOTIOPHILUS Dum.

sylvaticus *Eschsch.*---R.
semiopacus *Eschsch.*---Cal.
nitens *Lec.* (infra)---Or.

TRACHYPACHYS Motsch.

inermis *Motsch.* Car. Russl. 16, (infra)---Cal.? Or. R.
Holmbergi Mann. B. M. 1853.

OPISTHIUS Kirby.

Richardsonii *Kirby*.....Or.

LORICERA Latr.

semipunctata *Esch.*.....R. Cal.
foveata *Lec.*.....Cal.
decempunctata *Esch.*.....R.
congesta *Mann.* B. M. 1853.....'R.

BLETHISA Bon.

oregonensis *Lec.* Trans. Am. Phil. Soc. 10, 401.....Or.

ELAPHRUS Fabr.

obliteratus *Mann.* Bull. Mosc. 1853.....'R.
laevigatus *Lec.*.....Cal.
californicus *Mann.*.....R. Cal.
gratiosus Mann. B. M. 1853.

AMPHIZOIDAE.

AMPHIZOA Lec.

insolens Lec. (infra).....Cal.

DYTISCIDAE.

CNEMIDOTUS Illiger.

callosus *Lec.*.....Cal.

HALIPLUS Latr.

pantherinus *Aubé*.....'R.

HYDROPORUS Clairv.

obscurellus *Lec.*.....Cal.
erythrostomus *Mann.* B. M. 1852.....R.
striatellus *Lec.*.....Cal.
planatus *Mann.* Bull. Mosc. 1853.....'R.
signatus *Mann.* B. M 1853.....R.
truncatus *Mann.* B. M. 1853.....'R.
humeralis *Aubé*.....R.
contractulus *Mann.* B. M. 1852.....R.
oblongus *Aubé*.....'R.
parallelus *Say.*.....Cal.
catascopium Say.
interruptus Say.
griseostriatus *Aubé*.....'R.
subpubescens *Lec.*.....Cal.
hirtellus Lec.
nigellus *Mann.* B. M. 1853.....R.
vilis *Lec.*.....Cal.
ruficapillus *Mann.* B. M. 1852.....R.
rufinasus *Mann.* B. M. 1852.....'R.
decemlineatus *Mann.* B. M. 1853.....R.
lutescens *Lec.*.....Cal.

LACCOPHILUS Leach.

truncatus *Mann.* B. M. 1853.....R. Or. Cal.
vix a L. maculoso differt.

AGABUS Leach.

subopacus *Mann.* B. M. 1853.....'R.
dubius *Mann.*.....R.
tristis *Aubé*.....R.
hypomelas *Mann.*.....R.
scapularis *Mann.* B. M. 1852.....'R.
anthracinus *Mann.* B. M 1852.....R.
morosus *Lec.*.....Cal.
lutosus *Lec.*.....Cal.
phaeopterus Kirby, *Mann.* B. M. 1853.....'R.
bicolor Kirby, *Mann.* B. M. 1853.....'R.
semipunctatus Kirby, *Mann.* B. M. 1853.....'R.
atratus *Mann.* ibid.....'R.
brevicollis *Lec.* (infra).....Cal.
irregularis *Mann.* B. M. 1853.....'R.

ILYBIUS Er.

quadrimaculatus *Aubé*.....R. Or.
picipes, *Mann.* B. M. 1853.....'R.
Colymbetes picipes Kirby.

COLYMBETES Clairv.

divisus *Aubé*.....R. Or. Cal.
obscuratus *Mann.* (Cymatopterus) B. M. 1853.....'R.
dolabratus Er. *Mann.* (Cymatopterus) ibid.....'R.
Dytiscus dolabratus Payk.

ACILIUS Leach.

abbreviatus *Aubé*.....R. Or.
latiusculus *Lec.* (infra).....Cal.

DYTISCUS Linn.

confluens *Say.*.....R.
Ooligbukii Kirby, Mann. B. M. 1852 and 1853.
parvulus *Mann.* ibid. 1853.....R.
anxius *Mann.*.....R. Or. Cal.
marginicollis Lec.
sublimbatus *Lec.* (infra).....Or.

GYRINIDAE.

GYRINUS Linn.

picipes *Aubé*.....R.
consobrinus *Lec.*.....Cal.

HYDROPHILIDAE.

HELOPHORUS Fabr.

obscurus *Lec.*.....Cal.
auricollis *Esch.*.....'R.
inquinatus *Mann.* B. M. 1852.....R.
consimilis Mann. B. M. 1853.
an auricollis Esch?
angustulus *Mann.* B. M. 1853.....'R.

OCHTHEBIUS Leach.

Holmbergi *Mann.* B. M. 1853.....R.

LACCOBIUS Er.

ellipticus *Lec.* Proc. Acad. Nat. Sc. 7, 363.....Cal.

BEROSUS Leach.

punctatissimus *Lec.*.....Cal.
maculosus *Mann.*.....'R.

HYDROPHILUS Geoffroy.

triangularis *Say* ..... Cal.
Hydrophilus lugubris Motsch.
Stethoxus subsulcatus Lec.
californicus *Lec.* Proc. Acad. Nat. Sc. 7, 367 ..... Cal.
ellipticus *Lec.* ibid 7, 368 ..... Cal.

PHILHYDRUS Sol.

carinatus *Lec.* Proc. Acad. Nat. Sc. 7, 370 ..... Cal.
diffusus *Lec.* ibid. ..... Cal.

HYDROBIUS Leach.

seriatus *Lec.* Proc. Acad. Nat. Sc. 7, 372 ..... Cal.
?fucipes ‡ Mann. B. M. 1853 ..... 'R.

CERCYON Leach.

fimbriatum *Mann.* B. M. 1852 ..... R. Cal.
limbatum *Mann.* ..... R.
fulvipenne *Mann.* B. M. 1852 ..... R.
adumbratum *Mann.* ..... R.
posticatum *Mann.* B. M. 1552 ..... R.
lunigerum *Mann.* B. M. 1853 ..... 'R.

SILPHALES.

NECROPHORUS Fabr.

marginatus *Fabr.* ..... Cal.
guttula *Motsch.* ..... Cal.
nigrita *Mann.* ..... Cal.
pollinctor *Lec.* (infra) ..... Or.
tardus *Mann.* Bull. Mosc. 1853 ..... 'R.
maritimus *Mann.* B. M. 1843. ..... R.
infodiens Mann. B. M. 1853 ..... R.
confossor Lec. Proc. Acad. Nat. Sc. 7, 19 ..... Or.
?pollinctor Mann. B. M. 1853 ..... 'R.
defodiens *Mann.* ..... 'R.
mortuorum Fabr. *Mann.* B. M. 1853 ..... 'R.

SILPHA Linn.

lapponica, *Linn.* ..... R. Or. Cal.
caudata Say.
tuberculata Germ.
californica Mann.
ramosa *Say* ..... Or. Cal.
cervaria Mann.
sagax *Mann.* B. M. 1853 ..... 'R.

NECROPHILUS Latr.

hydrophiloides *Mann.* ..... R. Or. Cal.
ater Motsch. var.
latus *Mann.* B. M. 1852 ..... R.

SPHAERITES Duftsch.

politus *Mann.* ..... R.

LYROSOMA Mann.

opaca *Mann.* B. M. 1853 ..... 'R.

CATOPS Payk.

cadaverinus *Mann.* ..... R.
cryptophagoides *Mann.* B. M. 1852 ..... 'R.
brunnipennis *Mann.* B. M. 1853 ..... R.
luridipennis *Mann.* B. M. 1853 ..... R,
californicus *Lec.* Proc. Acad. Nat. Sc. 6 ..... Cal.
? Frankenhaeuseri *Mann.* B. M. 1852 ..... 'R.

COLON Herbst.

inermis *Mann.* B. M. 1852 ..... 'R.
magnicollis *Mann.* B. M. 1853 ..... 'R.
clavatus *Mann.* B. M. 1853 ..... 'R.

ANISOTOMA Illiger.

lateritia *Mann.* B. M. 1852 ..... 'R.
laeta *Mann.* B. M. 1853 ..... 'R.
curvata *Mann.* ibid ..... 'R.

HYDNOBIUS Schmidt.

punctostriatus *Mann.* B. M. 1853 ..... 'R.
Leiodes punctostriatus Kirby.

AGATHIDIUM Illiger.

angulare *Mann.* B. M. 1852 ..... R.
pulchrum *Lec.* Proc. Acad. Nat. Sc. 6, 286 ..... Cal.
concinnum *Mann.* B. M. 1852 ..... R.
effluens *Mann.* B. M. 1853 ..... 'R.
mandibulatun *Mann.* B. M. 1853 ..... 'R.
rotundulum *Mann.* B. M. 1852 ..... R.
brunnipenne *Lec.* ..... R.
Litochrus brunnipennis Mann. B. M. 1852.

CLAMBUS Fischer.

oblongulus *Mann.* B. M. 1853 ..... R.

SCYDMAENIDAE.

AEGIALITES Mann.

debilis *Mann.* B. M. 1853 ..... 'R.
Elosomo ? californica Motsch.

EUTHEIA Stephens.

scitula *Müklin*, Bull. Mosc. 1852 ..... 'R.

SCYDMAENUS Latr.

sparsus *Lec.* Proc. Acad. Nat. Sc. 6, 151 ..... Cal.
angustus *Lec.* ibid. ..... Cal.
gracilis *Lec.* ibid. ..... Cal.
biformis *Müklin*, B. M. 1852 ..... 'R.
californicus *Motsch.* ..... 'R. Cal.

PSELAPHIDAE.

CTENISTES Reichenb.

pulvereus *Lec.* ..... Cal.

TYCHUS Leach.

puberulus *Lec.* ..... Cal.
tenellus *Lec.* ..... Cal.

BATRISUS Aubé.

albionicus *Aubé* ..... Cal.

BRYAXIS Leach.

compar *Lec.* ..... Cal.
albionica *Motsch.* ..... 'R. Cal.

EUPLECTUS, Leach.

parviceps *Mäklin*, Bull. Mosc. 1852 ..... 'R.
clavicornis *Mäklin*, (Trimium,) ibid. ..... 'R.

STAPHYLINIDAE.*

BOLITOCHARA Mann.

notata *Mann.* B. M. 1852 ..... 'R.

MYRMEDONIA Er.

angularis *Mäklin*, B. M. 1853 ..... 'R.

HOMALOTA Mann. (emend. Er.)

granulata *Mann.* ..... R.
comparabilis *Mäklin*, B. M. 1853 ..... R.
maritima *Mann.* ..... R.
littoralis *Mäklin*, B. M. 1853 ..... R.
fucicola *Mäklin*, B. M. 1853 ..... R.
Tachyusa fucicola Mäklin, B. M. 1852.
picipennis, *Mann.* ..... R.
vasta *Mäklin*, B. M. 1853 ..... 'R.
laevicollis *Mäklin*, B. M. 1852 ..... 'R.
cursor *Mäklin*, ibid. ..... 'R.
nitens *Mäklin*, ibid. ..... 'R.
moesta *Mäklin*, ibid. ..... 'R.
pratensis *Mäklin*, ibid. ..... 'R.
geniculata *Mäklin*, ibid. ..... R.
planaris *Mäklin*, ibid. ..... 'R.
breviuscula *Mäklin*, ibid. ..... 'R.

OXYPODA Mann.

irrasa *Mäklin*, B. M. 1853 ..... R.

ALEOCHARA Grav.

castaneipennis *Mann.* ..... R.
bimaculata Grav. *Mäkl.* B. M. 1853 ..... R.
sulcicollis *Mann.* ..... R.
cognata *Mäklin*, B. M. 1852 ..... R.

GYROPHAENA Mann.

geniculata *Mäklin*, B. M. 1853 ..... R.

TACHINUS Grav.

nigricornis *Mann.* ..... R.
instabilis *Mäklin*, B. M. 1853 ..... 'R.
frigidus *Er.* ..... R.
circumcinctus *Mäklin*, B. M. 1853 ..... R.
maculicollis *Mäklin*, ibid. ..... R.
propinquus *Mann.* ..... 'R.
Elongatus *Gyll* ..... 'R.
apterus *Mäklin*, B. M. 1853 ..... 'R.

BOLITOBIUS Stephens.

poecilus *Mann.* B. M. 1852. ..... R.
biseriatus *Mann.* ..... 'R.

MYCETOPORUS Mann.

insignis *Mäklin*, B. M. 1853. ..... 'R.
nigrans *Mäklin*, B. M. 1853. ..... 'R.

OTHIUS Stephens.

macrocephalus *Er.* ..... R.
californicus *Mann.* ..... 'R.

THINOPINUS Lec.

pictus *Lec.*, (infra). ..... R. Cal.
Trichocanthus variegatus Motsch.

STAPHYLINUS Linn.

villosus *Grav.* ..... Cal.
bicinctus *Mann.* ..... R. Or. Cal.
tarsalis *Mann.* ..... 'R.
crassus *Mann.* ..... R.

PHILONTHUS Leach.

Siegwaldi *Mann.* ..... Cal. R.
albionicus *Mann.* ..... 'Cal.
aterrimus Er. *Mäklin*, B. M. 1853. ..... 'R.
picipennis *Mäklin*, B. M. 1852. ..... 'R.
femoralis *Mäklin*, B. M. 1853. ..... R.
canescens *Mäklin*, ibid. ..... R. Or. Cal.

QUEDIUS Leach.

plagiatus *Mann.* ..... 'R.
longipennis *Mann.* ..... R.
pediculus *Er.* ..... R.
erythrogaster *Mann.* B. M. 1853. ..... R.
melanocephalus *Mann.* ibid. ..... 'R.
brunnipennis *Mäklin*, B. M. 1852. ..... 'R.
rufipennis *Mäklin*, B. M. 1853. ..... 'R.
aenescens *Mäklin*, B. M. 1852. ..... R.
sublimbatus *Mäklin*, B. M. 1853. ..... R.
marginalis *Mäklin*, B M. 1852. ..... R.
molochinus *Grav.* ..... 'R.
hyperboreus *Er.* ..... 'R.

LIPAROCEPHALUS Mäklin.

brevipennis *Mäklin*, B. M. 1853. ..... 'R.

STENUS Latr.

maritimus *Motsch.* ..... R.
adspector *Mäklin*, B. M. 1852. ..... 'R.
parallelopipedus *Mäklin*, ibid. ..... 'R.
congener *Mäklin*, B. M. 1853. ..... R.
immarginatus *Mäklin*, B. M. 1853. ..... 'R.
cariniceps *Mäklin*, B. M. 1852. ..... 'R.
brevipennis *Mäklin*, B. M. 1852. ..... R.

BLEDIUS Leach.

longipennis *Mäklin*, B. M. 1852. ..... 'R.
albonotatus *Mäklin*, B. M. 1853. ..... 'R.

OXYTELUS Grav.

fuscipennis *Mann.* ..... R.

PHLOCONAEUS Er.

biimpressus *Mäklin*, B. M. 1852. ..... R.

* Only the described species are mentioned in the Catalogue. I have not included the numerous species collected by me in California, nearly all of which are nondescript, since subseqent investigations would be much confused if they were to be made known separately.

SYNTOMIUM, Curtis.

confragosum *Mäklin*, B. M. 1852. ..... 'R.

OLISTHAERUS Er.

megacephalus Er. *Mann.* B. M. 1853. ..... R.

ANTHOPHAGUS Grav.

laticollis *Mann.* ..... 'R.

LESTEVA Latr.

fusconigra *Mäklin*, B. M. 1853. ..... 'R.
Phlaeopterus fusconiger Motsch. Et. Ent. 1852, p. 78.

ARPEDIUM Er.

estaceum *Mann.* B. M. 1843. ..... R.
maculicolle *Mann.* ..... 'R.

LATHRIMAEUM Er.

subcostatum *Mäklin*, B. M. 1852. ..... R.
fimetarium *Mann.* B. M. 1852. ..... R.
Omalium fimetarium Mann.
Anthobium fimetarium Er.

ACIDOTA Stephens.

Frankenhaeuseri *Mäklin*, B. M. 1853. ..... 'R.

OLOPHRUM Er.

latum *Mäklin*, B. M. 1853. ..... 'R.
parvulum *Mäklin*, ibid. ..... 'R.
convexum *Mäklin*, ibid. ..... R.
marginatum *Mäklin*, ibid. ..... R.

DELIPHRUM Er.

brevicolle *Mäklin*, B. M. 1853. ..... R.
Arpedium brevicolle Mäklin, ibid 1852.

OMALIUM Grav.

plagiatum *Mann.* ..... 'R.
strigipenne *Mäklin*, B. M. 1852. ..... R.
humile *Mäklin*, B. M. 1853. ..... 'R.
flavipenne *Mäklin*, ibid. ..... 'R.
planipenne *Mäklin*, ibid. ..... 'R.
tumidulum *Mäklin*, ibid. ..... 'R.
foraminosum *Mäklin*, B. M. 1852. ..... R.
exsculptum *Mäklin*, B. M. 1852. ..... 'R.
laesicolle *Mäklin*, ibid. ..... R.
segmentarium *Mäklin*, ibid. ..... 'R.
longulum *Mäklin*, ibid. ..... R.
callosum *Mäklin*, ibid. ..... 'R.

ANTHOBIUM Stephens.

pothos *Mann.* ..... R.
rugulosum *Mäklin*, B. M. 1853. ..... 'R.

PROTEINUS Latr.

limbatus *Mäklin*, B. M. 1852. ..... R.
basalis *Mäklin*, B. M. 1852. ..... R.

MEGARTHRUS Stephens.

pictus *Motsch.* ..... R.
atratus *Mäklin*, B. M. 1852. ..... R.
angulicollis *Mäklin*, B. M. 1852. ..... R.

MICROPEPLUS Latr.

costatus *Mäklin*, B. M. 1852. ..... 'R.
laticollis *Mäklin*, B. M. 1853. ..... R.
brunneus *Mäklin*, B. M. 1852. ..... 'R.
costipennis *Mäklin*, B. M. 1853. ..... R.

TRICHOPTERYGIA.

TRICHOPTERYX Kirby.

laticollis *Mäklin*, B. M. 1852. ..... R.
insularis *Mäklin*, B, M. 1852. ..... R.
sitkhaensis Aliibert, Rev. Zool. 1847, 196. ..... 'R.
Ptilium sitkaense Motsch. B. M. 1845, 526; tab. 10, f. 13.
rotundata *Motsch.* (Achratrichis.) ..... Cal.

PTILIUM GYLL.

collani *Mäklin*, B. M. 1853. ..... 'R.

PTENIDIUM Er.

pullum *Mäklin*, B. M. 1852. ..... R. Cal.

SCAPHIDILIA.

SCAPHISOMA Leach.

castaneum *Lec.* ..... Cal.
Scapidium castaneum Motsch.

HISTERIDAE.

HISTER Linn.

sellatus *Lec.*, (infra.) ..... Cal.
sexstriatus *Lec.* ..... Cal.
immunis *Er* ..... Cal.
californicus *Marseul*, Ann. Ent. Soc. Fr. 3d, 2, 544 ..... 'Cal.

SAPRINUS Er.

interceptus *Lec.* ..... Cal.
interstitialis *Lec.* ..... Cal.
obscurus *Lec.* ..... Cal.
lugens *Er.* ..... Or. Cal.
californicus Mann.
oregonensis *Lec.* ..... Or. Cal.
insertus *Lec.* ..... Cal.
obductus *Lec.* ..... Or.
vestitus *Lec.* ..... Cal.
lubricus *Lec.* ..... Cal.
fimbriatus *Lec.* ..... Cal.
estriatus *Lec.* (infra) ..... Or.
lucidulus *Lec.* ..... Cal.
sulcifrons *Mann.* ..... Cal.

TERETRIUS Er.

obliquulus *Lec.* (infra) ..... Cal.

PHALACRIDAE.

PHALACRUS Payk.

penicellatus *Say*, ... Or. Cal.

OLIBRUS Er.

rufipes *Lec.* Proc. Acad. Nat. Sc. 8 ..... Or.
obtusus *Lec.* ibid. ..... Cal.
aquatilis *Lec.* ibid. ..... Cal.

NITIDULIDAE.

COLASTUS Er.

tinctus *Lec.* ---- Cal.
Strongylus ? tinctus Mann.

CARPOPHILUS Leach.

hemipterus *Stephens* (mercat. illatus) ---- R. Cal.
dimidiatus Er. (mercat. illatus) ---- 'R.

EPURAEA Er.

nubila *Lec.* (infra) ---- Cal.
convexiuscula *Mann.* ---- R.
placida *Mäklin*, B. M. 1853 ---- 'R.
adumbrata *Mann.* B. M. 1852 ---- R.
ambigua *Mann.* ---- 'R.
truncatella *Mann.* ---- R.
planulata Er. ---- R.
nigra *Mäklin*, B. M. 1853 ---- 'R.
flavomaculata *Mäklin*, ibid. ---- 'R.
linearis *Mäcklin*, ibid. ---- 'R.
infuscata *Mäklin*, ibid. ---- 'R.

NITIDULA Fabr.

ziczac *Say*, ---- Or.

OMOSITA Er.

inversa *Lec.* (infra) ---- Cal.

MELIGETHES Steph.

rufimanus *Lec.* (infra) ---- Cal.
moerens *Lec.* (infra) ---- Or.
seminulum *Lec.* (infra) ---- Or.

IPS Fabr.

Dejeanii *Kirby*, ---- R.
sepulchralis Randall, (Maine.)

RHIZOPHAGUS Herbst.

dimidiatus *Mann.* ---- R.
scalpturatus *Mann.* B. M. 1852 ---- 'R.
abbreviatus *Motsch.* ---- Cal.

TROGOSITIDAE.

TEMNOCHILA Westwood.

chlorodia *Lac.* Gen. Col. 2, 341 ---- Cal.
Trogosita chlorodia Mann.
viridicyanea *Lac.* ibid. ---- Or. Cal.
Trogosita viridicyanea Mann.

TROGOSITA Oliv.

mauritanica *Oliv.* (mercat. illata) ---- R. Cal.
? pusillima *Mann.* ---- 'R.

PELTIS Kug.

Pippingsköldii *Mann.* B. M. 1852, ---- R. Or.

PELTASTICA Mann.

tuberculuta *Mann.* B. M. 1852, ---- R.

COLYDII.

RHAGODERA Er.

tuberculata *Mann.* ---- Cal.

CERYLON Latr.

simplex *Lec.* (infra) ---- Cal.

CUCUIIPES.

CUCUIUS Fabr.

puniceus *Mann.* ---- R. Or.

BRONTES Fabr.

truncatus *Motsch.* ---- R. Cal.

DENDROPHAGUS Schönh.

Cygnaei *Mann.* ---- 'R.
americanus *Mann.* B. M. 1853 ---- 'R.

LAEMOPHLOEUS Lap.

longipennis *Mann.* ---- 'R.

PEDIACUS Shuckhard.

subcarinatus *Mann.* B. M. 1852 ---- B.

SILVANUS Latr.

dentatus *Say* (mercat. illatus) ---- R. Cal.
surinamensis *Stephens* (mercat. illatus) ---- R. Cal.

CRYPTOPHAGIDAE.

CRYPTOPHAGUS Herbst.

californicus *Mann.* ---- 'Cal.
octodentatus *Mäklin*, B. M. 1852 ---- 'R.
quadridentatus *Mann.* ---- 'R.
tuberculosus *Mäklin*, B. M. 1852 ---- 'R.
quadrihamatus *Mäklin*, B. M. 1853 ---- 'R.
bidentatus *Mäklin*, B. M. 1853 ---- 'R.
punctatissimus *Mäcklin*, B. M. 1853 ---- 'R.

PARAMECOSOMA Curtis.

serrata *Er.* ---- 'R.
Cryptophagus serratus Gyll.

ATOMARIA Stephens.

ferruginea *Er.* ---- 'R.
Cryptophagus ferrugineus Sahlb.
vespertina *Mäklin*, B. M. 1853 ---- 'R.
planulata *Mäklin*, ibid. ---- 'R.
Kamtschatica *Motsch.* Mäklin, ibid. ---- 'R.
fuscicollis *Mann.* B. M. 1852 ---- 'R.
fulvipennis *Mann.* ---- R.
lepidula *Mäklin*, B. M. 1852 ---- R.
laetula *Lec.* (infra) ---- Cal.

ANTHEROPHAGUS Latr.

suturalis *Mäklin*, B. M. 1853 ---- 'R.

LATHRIDIIDAE.

CORTICARIA Marsham.

spinulosa *Mann.* B. M. 1852 ---- 'R.
prionodera *Lec.* Proc. Acad. Nat. Sc. 7, 300 ---- Cal.
tenella *Lec.* ibid. 7, 301 ---- Cal.
herbivagans *Lec.* ibid. 7, 302 ---- Cal.
rufula *Lec.* ibid. 7, 303 ---- Cal.
canaliculata *Mann.* B. M. 1853 ---- 'R.

orbicollis *Mann.* B. M. 1853 ..... ‘ R.
deleta *Mann.* ibid. ..... ‘ R.
exigua *Mann.* ibid. ..... ‘ R.
? trisignata *Mann.* B. M. 1852 ..... R.

LATHRIDIUS Herbst.

quadricollis *Mann.* ..... R.
protensicollis *Mann.* ..... R.
costicollis *Lec.* Proc. Acad. Nat. Sc. 7, 303 ..... Cal.
sobrinus *Mann.* B. M. 1852 ..... R.
cordicollis *Mann.* ..... ‘ R.
cinnamopterus *Mann.* B. M. 1853 ..... ‘ R.
fulvipennis *Mann.* ibid. ..... ‘ R.
incisus *Mann.* ibid. ..... ‘ R.
strangulatus *Mann.* ibid. ..... ‘ R.
minutus *Mann.* ..... ‘ R.
parallelocollis *Mann.* ..... ‘ R.
curtulus *Mann.* B. M. 1853 ..... ‘ R.
crenatus *Lec.* Proc. Acad. Nat. Sc. 7, 304 ..... Cal.
parviceps *Lec.* ibid. ..... Cal.

MYCETOPHAGIDAE.

MYCETOPHAGUS Hellw.

pluriguttatus *Lec.* ..... Cal.

LITARGUS Er.

transversus *Lec.* ..... Cal.

DERMESTIDAE.

BYTURUS Latr.

grisescens *Lec.* (infra) ..... Cal.

DERMESTES Linn.

Mannerheimii *Lec.* Proc. Acad. Nat. Sc. 7, 107 ..... Cal.
marmoratus ‡ Mann.
talpinus *Mann.* ..... Or. Cal.
rattus *Lec.* Proc. Acad. 7, 108 ..... Cal.
vulpinus *Fabr.* ..... R. Cal.
lupinus Mann.

ATTAGENUS Latr.

angularis *Mann.* B. M. 1853 ..... ‘ R.

CRYPTORHOPALUM Guér.

triste *Lec.* Proc. Acad. Nat. Sc. 7, 111 ..... Cal.

ANTHRENUS Fabr.

lepidus *Lec.* Proc. Acad. Nat. Sc. ..... Cal.
varius Fabr. *Er.* (mercat. illatus) ..... Cal.
? apicalis *Mann.* ..... ‘ Cal.

BYRRHIDAE.

BYRRHUS Fabr.

cyclophorus Kirby, *Mann.* B. M. 1852 ..... ‘ R

SYNCALYPTA Stephens.

setulosa *Mann.* B. M. 1853 ..... ‘ R

PEDILOPHORUS Steffh.

acuminatus *Lec.* (infra) ..... R.
Morychus acuminatus Mann. B. M. 1852, 341.
oblongus *Lec.* (infra) ..... Or.
acuminatus ‡ Lec. Proc. Acad. Nat. Sc. 7, 115.

SIMPLOCARIA Stephens.

nitida *Motsch.* ..... R.
metallica Er. *Mann.* B. M. 1853 ..... R.

AMPHICYRTA Er.

dentipes *Er.* ..... Cal.
Eucyphus hybosoroides Mann.
chrysomelina *Er.* (infra) ..... Or.
simplicipes *Mann.* B. M. 1852 ..... ‘ R.

PARNIDAE.

LARA Lec.

avara *Lec.* Proc. Acad. Nat. Sc. 6, 43 ..... Cal.

HETEROCERIDAE.

HETEROCERUS Fabr.

tristis *Mann.* B. M. 1853 ..... ‘ R.

SCARABAEIDAE.

LIGYRUS Burm.

gibbosus *Lec.* Proc. Acad. Nat. Sc. 8 ..... Or. Cal.
Scarabaeus gibbosus De Geer.
Podalgus variolosus Burm.
Bothynus obsoletus Lec. (var.)

CREMASTOCHILUS Knoch.

angularis *Lec.* (infra) ..... Cal.

POLYPHYLLA Harris.

decemlineata *Lec.* ..... Or. Cal.
Melolontha 10-*lineata* Say.

TRYSSUS Er.

? comatus *Lec.* (infra) ..... Cal.

DIPLOTAXIS Kirby.

brevicollis *Lec.* (infra) ..... Or.
subangulata *Lec.* (infra) ..... Or.

DICHELONYCHA Kirby.

valida *Lec.* (infra) ..... Cal.
fulgida *Lec.* (infra) ..... Or.

SERICA McLeay.

anthracina *Lec.* (infra) ..... Or. Cal.

CAMPTORHINA Kirby.

serotina *Lec.* (infra) ..... Cal.

HOPLIA Illiger.

irrorata *Lec.* (infra) ..... Or. Cal.

PLEOCOMA Lec.

fimbriata *Lec.* (infra) ..... Cal.

CANTHON Illiger.

simplex *Lec.* (infra) ..... Or. Cal.

APHODIUS Illiger.

aleutus *Esch.* ..... ‘ R.
ursinus *Mann.* B. M. 1853 ..... R.

congregatus *Mann.* B. M. 1853 ..... R
guttatus *Esch.* ..... ' R.
pectoralis *Lec.* (infra) ..... Cal.
rubidus *Lec.* (infra) ..... Cal.
pardalis *Lec.* (infra) ..... Cal.
subaeneus *Lec.* (infra) ..... Cal.
cadaverinus *Er.* Ins. Deutschl. 880 ..... ' Cal.
Oxyomus cadaverinus Mann.

AEGIALIA Latr.

caelata *Lec.* (infra) ..... Cal.
crassa *Lec.* (infra) ..... Cal.
cylindrica *Mann.* B. M. 1853 ..... R.
Oxyomus cylindricus Mann.

TROX Fabr.

fascifer *Lec.* Proc. Acad. Nat. Sc. 7, 213 ..... Cal.

PLATYCERUS Geoffroy.

oregonensis *Westwood*, Tr. Ent. Soc. 4, 277 ..... ' Or. Cal.
tab. 20, f. 9.

SINODENDRON Fabr.

rugosum *Mann.* (infra) ..... Cal.

BUPRESTIDAE.

ANCYLOCHEIRA Esch.

Gibbsii *Lec.* (infra) ..... Or.
Langii *Lec.* (infra) ..... Or.
Buprestis Langii Mann.
rusticorum *Lec.* ..... Or. Cal.
Buprestis (Anoplis) rusticorum Kirby.
laeviventris *Lec.* (infra.)
adiecta *Lec.* Proc. Acad. 7, 17 (infra) ..... Or.
lauta *Lec.* ibid. (infra) ..... Or.
radians *Lec.* ibid. (infra) ..... Or.
?placida *Lec.* ibid. ..... Or.

BUPRESTIS Linn.

angulicollis *Lec.* (infra) ..... Cal.

MELANOPHILA Esch.

Drummondi *Lec.* ..... R. Or.
Buprestis (Trachyteris) Drummondi Kirby.
Apatura Drummondi Lap.
Melanophila guttulata ‡ Mann. B. M. 1853.
consputa *Lec.* (infra) ..... Cal.
appendiculata *Mann.* ..... ' R.
Buprestis appendiculata Fabr.

ANTHAXIA Esch.

expansa *Lec.* (infra) ..... Cal.

CHRYSOBOTHRIS Esch.

femorata *Fabr.* (Buprestis) var ? ..... Or.
trinervia *Mann.* B. M. 1853 ..... R. Or.
Buprestis (Odontomus) trinervia Kirby.
Chrysobothris scabripennis Lap.
Chrysobothris cicatricosa Motsch. Et. Ent. 1852.

DICERCA Esch.

pectorosa *Lec.* (infra) ..... Or.
crassicollis *Lec.* (infra) ..... Or.

POLYCESTA Esch.

californica *Lec.* (infra) ..... Cal.

ELATERIDAE.

EPIPHANIS Esch.

cornutus *Esch.* ..... R.

ANELASTES Kirby.

Latreillei *Lec.* Proc. Acad. 6, 46 ..... Or. Cal.

PEROTHOPS Er.

Wittickí *Lec.* (infra) ..... Cal.

ATHOUS Esch.

scissus *Lec.* (infra) ..... Or.
vittiger *Lec.* Tr. Am. Phil. Soc. 10, 427 ..... Or.
ferruginosus, *Esch.* ..... R.
pallidipennis *Mann.* ..... R. Or.
rufiventris *Esch.* ..... ' R.
triundulatus *Mann.* B. M. 1853 ..... ' R.

LIMONIUS Esch.

hispidus *Lec.* Tr. Am. Phil. Soc. 10, 432 ..... Cal.
ornatulus *Lec.* (infra) ..... Or.

CORYMBITES Latr. (emend. Lec.)

nubilus *Lec.* Tr. Am. Phil Soc. 10, 438 ..... Cal.
sericeus *Esch.* (Ludius) Mann. B. M. 1853 ..... ' R.
glaucus *Germ.* ..... Or.
decoratus *Mann.* (Diacanthus) B. M. 1853 ..... ' R.
parvicollis *Mann.* ibid ..... ' R.
bombycinus *Germ.* ..... ' Or.
diversicolor *Esch.* (Ludius) ..... ' Cal.
coniungens *Lec.* Tr. Am. Phil. Soc. 10, 440 ..... Cal.
Suckleyi *Lec.* (infra) ..... Or.
carbo *Lec.* Tr. Am. Phil. Soc. 10, 439 ..... Or.
lateralis *Lec.* Tr. Am. Phil. Soc. 10, 439 ..... Or.
confluens *Gebler.* (Elater) ..... ' R.
Diacanthus confluens Mann.
umbripennis *Lec.* ..... Cal.
Corymbites nubilipennis ‖ *Lec.* Tr. Am. Phil. Soc. 10, 441.
resplendens *Esch.* ..... R.
furtivus *Lec.* Tr. Am. Phil. Soc. 10, 442 ..... Cal.
festivus *Lec.* (infra) ..... Or.
obscurus *Lec.* ..... Cal.
cribrosus *Lec.* ..... Cal.
maurus *Lec.* ..... Or.
lobatus *Mann.* B. M. 1853 ..... R. Or.
Diacanthus lobatus Mann. B. M. 1846.
Corymbetes telum Lec. Tr. Am. Phil. Soc. 10, 445.
umbricola *Mann.* ..... R.
Ludius umbricola Esch.
caricinus *Germ.* ..... ' R.
Diacanthus caricinus Mann
volitans *Mann.* ..... R.
Ludius volitans Esch.
semiluteus *Lec.* ..... Cal.
saggitticollis *Lec.* ..... R.
Ludius sagitticollis Esch.
angularis *Lec.* Tr. Am. Phil. Soc. 10 ..... Or.

spectabilis *Mann.* B. M. 1852 ..... 'R.
serricornis *Mann.* (Diacanthus) ..... 'Cal.
angusticollis *Mann.* (Diacanthus) ..... 'R.
leucaspis *Germ.* (Diacanthus) ..... 'Or.
rupestris *Germ.* ..... 'Or.

ASAPHES Kirby.

morio *Lec.* Tr. Am. Phil. Soc. 10, 450 ..... Or

AGRIOTES Esch. (emend. Lec.)

subustus *Lec.* Tr. Am. Phil. Soc. 10, 458 ..... Cal.
sellatus *Mann.* (Dolopius) B. M. 1852 ..... 'R.
californicus *Mann.* (Dolopius) ..... 'Cal.
macer *Lec.* (infra) ..... Or.

ANCHASTUS Lec.

recedens *Lec.* Tr. Am. Phil. Soc. 10, 460 ..... Cal.
puberulus *Lec.* (vix a praeced. differt.) ..... Cal.
Cryptohypnus puberulus Mann.
cinereipennis *Mann.* (Cryptohypnus) ..... 'Cal.

ELATER Linn. (emend. Esch.)

phoenicopterus *Lec.* ..... Or.
Ampedus phoenicopterus Germ.
rhodopus *Lec.* (infra) ..... Or.
carbonicolor *Esch.* ..... R.
nigrinus Payk. *Mann.* B. M. 1853 ..... 'R.
caprella *Lec.* (infra) ..... Or.

CRATONYCHUS Er.

oregonensis *Lec.* Trans. Am. Phil. Soc. 10, 480 ..... Or.

MONOCREPIDIUS Esch. (emend. Lec.)

comis *Lec.* l. c. 10, 484 ..... Cal.

CRYPTOHYPNUS Esch.

littoralis *Germ.* ..... R.
squalidus *Lec.* Tr. Am. Phil. Soc. 10, 487 ..... Cal.
nocturnus *Dej.* ..... 'R.
Hypolithus nocturnus Esch.
limbatus *Mann* B. M. 1852 ..... R.
musculus *Mann.* ..... 'R.
Elater musculus Esch.
hyperboreus *Dej.* Mann. B. M. 1853 ..... 'R.
impressicollis *Mann.* B. M. 1853 ..... 'R.
scarificatus *Mann.* B. M. 1853. ..... R.
fallax *Mann.* ibid. ..... 'R.
vestitus *Mann.* ibid. ..... 'R.
lucidulus *Mann.* ibid. ..... 'R.
restrictulus *Mann.* ibid. ..... 'R.

ADELOCERA Latr.

aurorata *Lec.* Tr. Am. Phil. Soc. 10. ..... Or.
Elater auroratus Say.

MELANACTES Lec.

densus *Lec.* Tr. Am. Phil. Soc. 10, 494. ..... Cal.

ALAUS Esch.

myops *Esch.* ..... Or.
Elater myops Fabr.

CARDIOPHORUS Esch.

latiusculus *Esch.* ..... 'Cal.
tumidicollis *Lec.* Tr. Am. Phil. Soc. 10, 498. ..... Or.
californicus *Mann.* ..... 'Cal.
tenebrosus *Lec.* Tr. Am. Phil. Soc. 10, 498. ..... Cal.
tantillus *Mann.* ..... 'Cal.
transfugus *Lec.* Tr. Am. Phil. Soc. 10. 500. ..... Cal.

ATOPIDAE.

STENOCOLUS Lec.

scutellaris *Lec.* Proc. Acad. Nat. Sc. 6, 229. ..... Cal.

CYPHONIDAE.

HELODES Latr.

concinna *Lec.* Proc. Acad. Nat. Sc. 6, 353. ..... Cal.
variabilis Guér. *Mann.* B. M. 1853. ..... 'R.

LAMPYRIDAE.

ELLYCHNIA Lec.

facula *Lec.* Proc. Acad. Nat. Sc. 7, 17, (infra) ..... Or.
corrusca *Lec.* ibid, 5, 333, (fide Klug.) ..... 'Or.
Lampyris corrusca Linn.

TELEPHORIDAE.

SILIS Charp.

pallida *Mann.* ..... R. Cal.
lutea Lec. Mels. Cat. 78.
pallens Lec. Proc. Acad. Nat. Sc. 5, 339.

TELEPHORUS Geoffr.

lautus *Lec.* Proc. Acad. 5, 340. ..... Cal.
grandicollis *Lec.* ibid. ..... Cal.
divisus *Lec.* ibid. ..... Cal.
notatus *Lec.* ..... Cal.
Cantharis notata Mann.
larvalis *Lec.* (infra) ..... Or.

PODABRUS (Fischer) Westwood.

pruinosus *Lec.* Proc. Acad. 5, 344. ..... Or.
piniphilus *Dej.* ..... R. Or.
Rhagonycha piniphila Esch.
sericatus *Mann.*, (Rhagonycha) ..... 'R.
binodulus *Mann.*, (Rhagonycha) ..... 'R.
anthracinus *Mann.*, (Rhagon.) B. M. 1853. ..... 'R.

LYCIDAE.

ANARHYNCUS Guérin.

hamatus *Mann.*, (Dictyopterus) ..... 'R.
simplicipes *Leo.* ..... R.
Dictyopterus simplicipes Mann.

MELYLIDES.

COLLOPS Er.

histrio *Er.* ..... Cal.

MALACHIUS Fabr. (emend. Er.)

auritus *Lec.* Proc. Acad. Nat. Sc. 6, 165. ..... Cal.

ATELESTUS Er.

? collaris *Lec.* Proc. Acad. Nat. Sc. 6, 168. ..... Cal.

DASYTES Fabr.

canescens *Mann.* ---- Cal.
laticollis *Mann.* ---- ‘Cal.
parvicollis *Mann.* ---- ‘Cal.
rotundicollis *Lec.* Pr. Acad. 6, 170. ---- Cal.
difficilis *Lec.* ibid. ---- Cal.

CLERIDAE.

PERILYPUS Spin.

carbonarius *Spin.* ---- ‘Cal.

COLYPHUS Spin.

signaticollis *Spin.* ---- ‘Cal.
cinctipennis *Spin.* ---- ‘Cal.
rufipennis *Spin.* ---- ‘Cal.
interceptus *Spin.* ---- ‘Cal.

CYMATODERA Gray.

angustata *Spin.* ---- Cal.

TRICHODES Herbst.

ornatus *Say.* ---- Or. Cal.
Douglassianus White, Brit Mus. Cat. 60.
Hartwegianus White, ibid.

CLERUS Geoffr.

sphegeus *Fabr.* ---- Or.
eximius *Mann.* ---- Cal.
holosericeus White, l. cit.
undulatus *Say.* ---- R.
Thanasimus abdominalis Kirby.
Thanasimus pictus Spin.

ENOPLIUM Fabr.

dichroum *Lec.* (infra) ---- Cal.

CORYNETES Fabr.

rufipes *Fabr.*, (mercat. illatus) ---- Cal.
ruficollis *Fabr.*, (mercat. illatus) ---- R. Cal.
marginellus *Chevr.* ---- ‘Cal.

ACREPIS Lec.

maculata *Lec.* ---- Cal.

PTINIORES.

PTINUS Linn.

fur *Linn.*, (mercat. allatus) ---- R. Cal.
interruptus *Lec.*, (infra) ---- Cal.

DINODERUS Stephens.

substriatus *Steph. Mann.* B. M. 1853. ---- ‘R.
Apate substriata Paykull.

SINOXYLON Duftschm.

declive *Lec.*, (infra) ---- Cal.

EXOPS Curtis.

Stoutii *Lec.* ---- Cal.
Alloeocnemis Stoutii Lec. Proc. Acad. 6, 232.
ovicollis *Lec.*, (infra) ---- Cal.

ANOBIUM Fabr.

paniceum *Fabr.*, (mercat. allatum) ---- R. Cal.

CIS Latr.

vitulus *Mann.* ---- Cal.
tridentatus *Mann.* B. M. 1852. ---- R.
biarmatus *Mann.* B. M. 1852. ---- R.
americanus *Mann.* B. M. 1852. ---- ‘R.
ephippiatus *Mann.* B. M. 1853. ---- ‘R.

TENEBRIONIDAE.

TRIOROPHUS Lec.

rugiceps *Lec.* ---- Cal.

EURYMETOPON Esch.

rufipes *Esch.* ---- Cal.
atrum *Lec.* ---- Cal.
ochraceum *Esch.* ---- ‘Cal.

NYCTOPORIS Esch.

galeata *Lec.*, (infra) ---- Cal.
cristata *Esch.* ---- Cal.
aequicollis *Esch.* ---- Cal.

DYSMATHES Mann.

Sahlbergi *Mann.* B. M. 1853. ---- ‘R.

CENTRIOPTERA Mann.

caraboides *Mann.* ---- ‘Cal.

NOSODERMA Sol.

diabolicum *Lec.*, (infra) ---- Cal.
porcatum *Lec.* Proc. Acad. Nat. Sc. 6, 235. ---- Or. Cal.

USECHUS Motsch.

lacerta *Motsch.* ---- ‘Cal.

ELEODES Esch.

grandicollis *Mann.* ---- Cal.
gigantea *Mann.* ---- Cal.
quadricollis *Esch.* ---- Cal.
dentipes *Esch.* ---- Cal.
connexa *Lec.*, (infra) ---- Or.
sulcipennis *Mann.* ---- Or. Cal.
Fischeri *Mann.* ---- Cal.
marginata *Esch.* ---- Cal.
granulata *Lec.*, (infra) ---- Or.
producta *Esch.* ---- Cal.
humeralis *Lec.*, (infra) ---- Or.
planata *Esch.* ---- Cal.
reflexicollis *Mann.* ---- ‘Cal.
parvicollis *Esch.* ---- Cal.
clavicornis *Esch.* ---- ‘Cal.
rotundipennis *Lec.*, (infra) ---- Or.
stricta *Lec.*, (infra) ---- Or.
subligata *Lec.*, (infra) ---- Or.
intricata *Mann.* ---- Cal.
cordata *Esch.* ---- Cal.
tuberculata *Esch.* ---- Cal.
pimelioides *Mann.* ---- Or. Cal.

AMPHIDORA Esch.

littoralis *Esch.* ---- Cal.

HELOPS Fabr.

rugulosus *Lec.* ---- Cal.

californicus *Mann.* ---- Or. Cal.
laetus *Lec.*, (infra) ---- Or.

APOCRYPHA Esch.

anthicoides *Esch.* ---- Cal.
dyschirioides *Lec.* ---- Cal

CONONOTUS Lec.

sericans *Lec.*, (infra) ---- Cal.
punctatus *Lec.* ---- Cal.

CONIONTIS Esch.

viatica *Esch.* ---- Cal.
puncticollis *Lec.* ---- Cal.
affinis *Lec.* ---- Cal.
Eschscholtzii *Mann.* ---- Cal.
ovalis *Lec.* ---- Or.
nemoralis *Esch.* ---- Cal.
subpubescens *Esch.* ---- Cal.

COELUS Esch.

ciliatus *Esch.* ---- Cal.

NOTIBIUS Lec.

puncticollis *Lec.* ---- Cal.

CONIBIUS Lec.

seriatus *Lec.* ---- Cal.

BLAPSTINUS († Dej.) Waterhouse.

brevicollis *Lec.* ---- Cal.
pulverulentus *Dej.* ---- Or. Cal.
Emmenastus rugosus Motsch., (fide Mann.)

EULABIS Esch.

ruficeps *Esch.* ---- Cal.
bicarinata *Esch.* ---- Cal.

CALCAR Latr.

estriatus *Lec.* ---- Cal.
Tenebrio estriatus Lec.

TENEBRIO Linn.

molitor *Linn.*, (mercat. allatus) ---- 'R.

HETEROPHAGA.

mauritanica *Mann.* B. M. 1852, (mercat. allata) ---- 'R.
Tenebrio mauritanicus Fabr.

CIBDELIS Mann.

Blaschii *Mann.* ---- Cal.

NYCTIBATES.

serrata *Mann.*, (infra) ---- Or.

COELOCNEMIS Mann.

magna *Lec.* ---- Cal.
dilaticollis *Mann.* ---- Cal.
californica *Mann.* ---- 'Cal.

TRIBOLIUM Macleay.

ferrugineum *Macleay*, (mercat. allatum) ---- R. Cal.
Trogosita ferruginea Fabr.

GNATHOCERA Thunb.

cornuta *Mann.* (Cerandria) B. M. 1852, (mercat. ill.) ---- 'R.
Trogosita cornuta Fabr.
maxillosa *Mann.* (Cerandria) ibid. (mercat. illata) ---- 'R.
Trogosita maxillosa Fabr.

PLATYDEMA Lap.

oregonense *Lec.*, (infra) ---- Or.

PHALERIA Latr.

globosa *Lec.*, (infra) ---- Cal.
picta *Mann.* ---- 'R.

CISTELA Fabr.

sericea *Say*, var.? ---- Cal.

MELANDRYADAE.

SERROPALPUS Payk.

obsoletus *Hald.* ---- Or.
? an var. *substriati* Hald.
striatus Hellenius, *Mann.* B. M. 1853. ---- 'R.

DIRCAEA Fabr.

Holmbergii *Mann.* B. M. 1852. ---- 'R.

HALLOMENUS Payk.

basalis *Mann.* B. M. 1853. ---- 'R.

STENOTRACHELUS Latr.

obscurus *Mann.* B. M. 1852. ---- 'R.

PYTHO Latr.

deplanatus *Mann.* B. M. 1853. ---- 'R.

PRIOGNATHUS Lec.

monilicornis *Lec.* ---- R.
Pytho Sahlbergi Mann.
Dytilus monilicornis Randall.

PYROCHROIDAE

PEDILUS Fischer.

punctulatus *Lec.* ---- Cal.

DENDROIDES Latr.

ephemeroides *Lec.* ---- R.
Pogonocerus ephemeroides Mann. B. M. 1852.

MORDELLONAE.

ANASPIS Latr.

luteipennis *Lec.* ---- Cal.
atra *Lec.* ---- Cal.
pallescens *Mann.* ---- R. Or.
sericea *Mann.* ---- R.

MORDELLA Fabr.

scutellaris *Fabr.* ---- Cal.

MELOIDAE.

MELOE Linn.

strigulosus *Mann.* B. M., 1853. ---- R. Cal.

LYTTA Linn.

Cooperi *Lec.* Proc. Acad. 7, 18, (infra.)—Or.
Childii *Lec.* (infra)—Cal.
moerens *Lec.*—Cal.
cyanipennis *Lec.*—Or.
smaragdula *Lec.* Proc. Acad. 6, 335.—Cal.
stygica *Lec.*—Or.
Rathvoni *Lec.* Proc. Acad. 6, 335.—Cal.
chalybea *Lec.*—Or.
puncticollis *Lec.*—Or. Cal.
Epicauta puncticollis Mann.
oblita *Lec.*—Cal.
maura *Lec.*—Cal.

NEMOGNATHA Fabr.

apicalis *Lec.* Proc. Acad. Nat. Sc. 6, 345.—Or.
dubia *Lec.* ibid, 346.—Cal.
decipiens *Lec.* ibid. 347.—Or.
scutellaris *Lec.* ibid. 347.—Cal.

ANTHICIDAE.

NOTOXUS.

cavicornis *Lec.*—Cal.
talpa *Ferté.*—' Cal.
elegantulus *Ferté.*—' Cal.

ANTHICUS Fabr.

nitidulus *Lec.*—Cal.
californicus *Ferté.*—Cal.
punctulatus *Lec.*—Cal.
nigrita *Mann.* B. Mosc. 1853—R.
biguttulus *Lec.*—Cal.
nigritulus *Lec.*—Cal.
obscurellus *Lec.*—Cal.
quadrilunatus *Ferté.*—' Cal.
squamosus *Ferté.*—' Cal.
lugubris *Ferté.*—' Cal.

OEDEMERIDAE.

DITYLUS Fischer.

quadricollis *Lec.* (infra)—Or.
consors Lec.
gracilis *Lec.* Pr. Acad. 7, 18 (infra)—Or.
vestitus *Lec.* (infra)—Or.

ASCLERA Schmidt.

bicolor *Lec.*—Or.

NACERDES Steven.

quadrimaculata *Mann.* B. M. 1853—' R. Cal.
Probosca 4-maculata Motsch. Et. Ent. 1852, 78.

SALPINGIDAE.

SALPINGUS Illiger.

elongatus *Mann.* B. M. 1852—R.

RHINOSIMUS Latr.

aeneirostris *Mann.* B. M. 1853—' R.

TANYRHINUS Mann.

singularis *Mann.* B. M. 1852—' R.

CURCULIONIDAE.

BRUCHUS Linn.

pauperculus *Lec.* (infra)—Cal.

RHYNCHITES Herbst.

bicolor *Herbst.* cum. var.—Cal. Or.
Attelabus bicolor Fabr.
Glastinus *Lec.* (infra)—Cal.

APION Herbst.

cuprescens *Mann.*—' R.
crassinasum *Lec.* (infra)—Or. Cal.
proclive *Lec.* (infra)—Cal.
troglodytes *Mann.*—Cal.
cribricolle, *Lec.* (infra)—Cal.
cavifrons *Lec.* (infra)—Or.
protensum *Lec.* (infra)—Cal.

SITONES Germ.

californicus *Schönh.*—Or. Cal.
seniculus *Mann.*—Cal.
vittatus *Lec.* (infra)—Cal.
sordidus *Lec.* (infra)—Cal.

TRIGONOSCUTA Motsch.

pilosa *Motsch.*—Cal.

ALOPHUS Schönh.

constrictus *Lec.* (infra)—Or.
alternatus ‡ Mann. B. M. 1843—R.
seriatus *Mann.* B. M. 1853—R.
didymus *Lec.* (infra)—Or.

LIOPHLOEUS Germ.

inquinatus *Mann.* B. M. 1852—R.

LEPIDOPHORUS Kirby.

lineaticollis *Kirby*—R.

LISTRODERES Schönh.

teretirostris *Lec.* (infra)—Cal.
oregonensis *Lec.* (infra.)

HYLOBIUS Germ.

? taeniatus *Lec.* (infra)—Or.
? torpidus *Lec.* (infra)—Or.

LEPYRUS Germ.

gemellus *Kirby* Mann. B. M. 1853—' R.

LEPOSOMA Motsch.

californicum *Motsch.*—Cal.

TRACHYPHLOEUS Germ.

? incomptus ‡ *Lec.*—Cal.
? squalens ‡ *Lec.*—Cal.
? dilatatus ‡ *Lec.*—Cal.

PTOCHUS Schönh.

saccatus *Lec.* (infra)—Or.
globiventris *Lec.* (infra)—Cal.

OTIORHYNCHUS Germ.

segnis *Lec.* (infra)—Or. Cal.
? naso *Lec.* (infra)—Or.

TYLODERES Sch.

gemmatus *Lec.* (infra) ..... Or.

EMPHYASTES Mann.

fucicola *Mann.* B. M 1852 (infra) ..... R. Cal.

PHYTONOMUS Schönh.

seriatus *Mann.* B. M. 1852 ..... ' R.

PLINTHUS Germ.

carinatus *Schönh.* ..... R. Or.
Heilipus scrobiculatus Mann.

LIXUS Fabr.

auctus *Lec.* (infra) ..... Or.
poricollis *Mann.* ..... ' Cal.
modestus *Mann.* ..... ' Cal.

PISSODES Germ

costatus *Mann.* ..... R. Or.

MAGDALINUS Germ.

imbellis *Lec* (infra) ..... Or.
gracilis *Lec.* (infra) ..... Cal.

ERIRHINUS Schönh.

morio *Mann.* B. M. 1853 ..... R.
rufulus *Mann.* ibid. ..... R.
luridus *Mann.* ibid. ..... ' R.
subsignatus *Mann.* ibid. ..... ' R.
vestitus *Mann.* ibid. ..... ' R.

BALANINUS Germ.

uniformis *Lec.* (infra)

ANTHONOMUS Germ.

brunnipennis *Mann.* ..... ' Cal.

TRACHODES Germ.

ptinoides *Germ.* ..... R.
horridus *Mann.* B. M. 1852 ..... R.
quadrituberculatus *Mann.* ibid. ..... R.
Sthereus 4-tuberculatus Motsch.

CENTRINUS Schönh.

confusus *Say.* Mann. B. M. 1843 ..... ' Cal.

BARIDIUS Schönh.

macer *Lec.* (infra) ..... Cal.
scriatus *Lec.* (infra) ..... Cal.

CEUTORHYNCHUS Schüppel.

pusio *Mann.* B. M. 1852 ..... R.

ANALCIS Schönh.

morbillosus *Lec.* (infra) ..... Cal.

RHYNCOPHORUS Schönh.

asperulus *Lec.* (infra) ..... Cal.

SPHENOPHORUS Sch.

discolor *Mann.* ..... Cal.
subcarinatus *Mann.* ..... Cal.
gentilis *Lec.* (infra) ..... Cal.

SITOPHILUS Schönh.

oryzae *Schönh.* (mercat. allatus) ..... R. Cal.
Curculio oryzae Linn.

COSSONUS Clairv.

piniphilus *Schönh.* ..... ' Cal.

RHYNCOLUS Creutzer.

brunneus *Mann.* ..... R.

HYLASTES Er.

rugipennis *Mann.* B. M. 1852. ..... R.
Hylurgus rugipennis Mann.
nigrinus *Mann.* B. M. 1852. ..... R. Or.
Hylurgus nigrinus Man. ibid.
pumilus *Mann.* B. M. 1852. ..... R.
Hylurgus pumilus Mann.
subcostulatus *Mann.* B. M. 1853. ..... R.
cristatus *Mann.* B. M. 1853. ..... R.

HYLURGUS Latr.

rufipennis *Kirby*, Mann. B. M. 1853. ..... ' R.
obesus *Mann.* ..... ' R.

DENDROCTONUS Er.

valens *Lec.*, (infra) ..... Cal.
similis *Lec.*, (infra) ..... Or.

HYLESINUS Fabr.

sericeus *Mann.* B. M. 1852. ..... ' R.
Hylurgus sericeus Mann.
rufipennis *Mann.* B. M. 1853. ..... ' R.
Apate (*Lepisomus*) *rufipennis* Kirby.

POLYGRAPHUS Er.

saginatus *Mann.* B. M. 1853. ..... ' R.

XYLOTERUS Er.

bivittatus *Mann.* B. M. 1853. ..... ' R.
Apate bivittata Kirby.
cavifrons *Mann.* B. M 1852. ..... ' R.
Bostrichus cavifrons Mann.

BOSTRICHUS Fabr.

interruptus *Mann.* B. M. 1852. ..... ' R.
tridens *Mann.* ibid. ..... ' R.
concinnus *Mann.* ibid. ..... R.
semicastaneus *Mann.* ibid. ..... ' R.
septentrionis *Mann.* ..... ' R.
terminalis *Mann.* ..... Cal.
affaber *Mann.* B. M. 1852. ..... ' R.
nitidulus *Mann.* B. M. 1852. ..... ' R.
pubipennis *Lec.*, (infra) ..... Cal.

CRYPHALUS Er.

striatulus *Mann.* B. M. 1853. ..... ' R.

CORTHYLUS Er.

scutellaris, *Lec.*, (infra) ..... Cal.

CERAMBYCIDAE.

SPONDYLIS Fabr.

upiformis *Mann.* ---- R. Or. Cal.

ERGATES Serv.

spiculatus *Lec.* Proc. Acad. Nat. Sc. 7, 218, (infra) ---- Or. Cal.
Trichocnemis spiculatus Lec

PRIONUS Fabr.

californicus *Motsch.* ---- R. Or. Cal.
crassicornis Lec.

ASEMUM Serv.

atrum *Esch.* ---- Or. Cal.
moestum *Hald.* Mann. B. M. 1853. ---- 'R.
asperum *Lec.*, (infra) ---- Or.

CRIOCEPHALUS Muls.

productus *Lec.* ---- Or.

OPSIMUS.

quadrilineatus *Mann.*, (infra) ---- R. Or.

TETROPIUM Kirby.

cinnamopterum *Kirby*, Mann. B. M. 1853, (var.?) ---- R. Or. Cal.

SEMANOTUS Muls.

Proteus *Lec.* ---- 'R.
callidium Proteum Kirby, Mann. B. M. 1853.
amethystinus *Lec.* Proc Acad. Nat. Sc. 6, 234. ---- Cal.
ligneus *Lec.*, (mercat. illatus) ---- Cal.
Callidium ligneum Fabr.

CALLIDIUM Fabr.

aeneum *Lec.*, (infra) ---- Or.
Mannerheimii *Lec.*, (infra) ---- R. Or.
dimidiatum || Mann.
varium *Fabr.*, (mercat. illatum) ---- Cal.
vulneratum *Lec.*, (infra) ---- Cal.
decussatum *Lec.*, (infra) ---- Cal.
antennatum *Newm.* ---- Cal.
cicatricosum *Mann.* B. M. 1853 ---- R.

CROSSIDIUS Lec.

? hirtipes *Lec.* Pr. Acad. 7, 18 (infra) ---- Or.

ROSALIA Serv.

funebris *Motsch.* (infra) ---- R. Or.

OENEMONA Newm.

pulverulenta *Motsch.* Et. Ent. 1852, 76 ---- 'Cal.
Plagithmyzus pulverulentus Motsch.

CLYTUS Fabr.

undulatus *Say* ---- Or.
Sayi Lap.
undatus Kirby.
nauticus *Mann.* ---- Or. Cal.
gramineus Hald.
coniunctus *Lec.* (infra) ---- Cal.

ULOCHAETES Lec.

leoninus *Lec.* Proc. Acad. Nat. Sc. 7, 82 (infra) ---- Or.

DESMOCERUS Serv.

auripennis *Chevr.* Rev. et Mag. de Zool. April, 1855 ---- Or.

RHAGIUM Fabr.

investigator *Mann.* B. M. 1852 ---- R. Or.
inquisitor *Fabr.* (mercat. illatus?) ---- 'R.

ACMAEOPS Lec.

coriaceus *Lec.* Pr. Acad. 7, 219 (infra) ---- Or.
Piodes coriacea Lec.
fuscus *Lec.* (infra) ---- Cal.
lugens *Lec.* (infra) ---- Cal.
californicus *Lec.* ---- Cal.
ater *Lec.* ---- Or.
subcyanea *Lec.* (infra) ---- Cal.
subaeneus *Lec.* ---- Cal.
tumida *Lec.* (infra) ---- Cal.
marginalis *Lec* ---- Or.
subpilosus *Lec.* ---- Or.
militaris *Lec* ---- Or.

TOXOTUS Serv.

flavolimbatus *Lec.* Proc. Acad. 7, 18 (infra) ---- Or.
spurcus *Lec.* (infra) ---- Or.
vestitus *Hald.* ---- Or. Cal.

LEPTURA Linn.

(† STRANGALIA Serv.)

obliterata *Lec.* ---- Or.
vitiosa *Lec.* (infra) ---- Or.
impura *Lec.* (infra) ---- Cal.
molybdica *Lec.* ---- Cal.
amabilis *Lec* (infra) ---- Or.
laeta *Lec.* (infra) ---- Or. Cal.
instabilis *Lec.* ---- Or.
Pachyta instabilis Hald.
convexa *Lec.* ---- Or.
vexatrix *Mann.* (Pachyta) B. M. 1853 ---- 'R.
fulvipennis *Mann.* (Pachyta) B. M. 1853 ---- 'R.

(†† LEPTURA Serv.)

valida *Lec.* (infra) ---- Or.
subargentata *Kirby* Mann. B. M. 1853 ---- 'R.
crassipes *Lec.* (infra) ---- Or.
fuscicollis *Lec.* (infra) ---- Cal.
Frankenhaeuseri *Lec.* ---- R.
Anoplodera Frankenh. Mann. B. M. 1853.
macilenta *Lec.* ---- R.
Anoplodera macilenta Mann. B. M. 1853.
? liturata *Kirby* (Pachyta) Mann. B. M. 1852 ---- 'R.
militaris || *Chevr.* Rev. et Mag. de Zool. April 1855 ---- Or.

PLECTURA Mann.

spinicauda *Mann.* B. M. 1852 ---- 'R.
producta *Lec.* Pr. Acad. Nat. Sc. 7, 19 (infra) ---- Or.

MONOHAMMUS Latr.

scutellatus *Hald.* Mann. B. M. 1853 ---- R. Or.

TETRAOPES Dalman.

oregonensis *Lec.* Pr. Acad. Nat. Sc. 7, 19 (infra)----Or.
basalis *Lec.*----Cal.

SAPERDA Fabr.

One species in coll. exp. of Capt. Wilkes----Or.

MESOSA Serv.

Guexi *Lec* (infra)----Cal.

CHRYSOMELINAE.

DONACIA Fabr.

Germari, *Mann.*----R.
flavipennis *Mann.*----R.
pyritosa *Lec.* (infra)----Or.

SYNETA Esch.

carinata *Mann*----R. Or.
albida *Lec.* (infra)----Or.
simplex *Lec.* (infra)----Or.

SAXINIS Lec

saucia *Lec.* (infra)----Or. Cal.

CHLAMYS Knoch.

conspersa *Mann.*----Cal.
rugulosa *Motsch.*----'Cal.

CRYPTOCEPHALUS Fabr.

sanguinicollis *Suffr.* Linn. Ent. 7, 78----Cal.
chalconatus *Mann.*----Cal.

PACHYBRACHYS Suffr.

signatifrons *Mann.*----'Cal.
melanostictus *Suffr.* Linn. Ent. 7, 191----'Cal.
hybridus *Suffr.* ibid. 7, 157----Cal.
viduatus *Suffr.*----Or.
Cryptocephalus viduatus Fabr.
Cryptocephalus bivittatus Say.

EUMOLPUS Kugellan.

vitis *Fabr.* Mann. (Bromius) B. M. 1853----'R.

PACHNEPHORUS Redt.

smaragdulus *Lec.* (infra)----Cal.

CHRYSOCHUS Redt.

cobaltinus *Lec.* (infra)----Or. Cal.

TIMARCHA Redt.

intricata *Hald.* Proc. Acad. Nat. Sc. 6, 363----Or. Cal.
intertexta Hald. (var.) ibid.

CHRYSOMELA Linn.

Bigsbyana *Kirby*----Or.
subsulcata *Motsch.*----R.
vidua *Rogers.* Proc. Acad. Nat Sc. 8----Or.
scripta *Fabr.*----Or
confluens *Rogers.* Proc. Acad. Nat. Sc. 8----Or.
lapponica *Linn.* Mann. (Lina.) B. M. 1853----'R.
viminalis *Linn. Mann.* (Gonioctena) B. M. 1853----'R.
arctica *Rogers.* Proc. Acad. 8----R.
Gonioctena arctica, Mann. B. M. 1853.
Gonioctena affinis ‡ Mann. ibid. 1852.
californica *Rogers.* Proc. Acad. Nat. Sc. 8----Cal.
caesia *Rogers.* Proc. Acad. Nat. Sc. 8----Cal.
interstitialis *Mann.* (Phratora) B. M. 1853----'R.

HALTICA Fabr.

maritima *Lec.*----Cal.
Disonycha maritima Mann.
puncticollis *Lec.* (infra)----Or. Cal.
limbicollis *Lec.* (infra)----Cal.
californica *Lec.*----Cal.
Graptodera californica Mann.
prasina *Lec.* (infra)----Cal.
plicipennis *Lec.*----Or. Cal.
Graptodera plicipennis Mann.
obolina *Lec.* (infra)----Cal.
lazulina *Lec.* (infra)----Or.
tombacina *Mann.* B. M. 1853----'R.
cerina *Lec.* (infra)----Cal.
subglobosa *Lec.*----Cal.
Aphthoma subglobosa Motsch.
aereola *Lec.* (infra)----Cal.
subcrinita *Lec.* (infra)----Cal.
ligata *Lec.* (infra)----Cal.
subaenea *Lec.* (infra)----Cal.
albionica *Lec.* (infra)----Cal.
lepidula *Lec.* (infra)----Cal.

LONGITARSUS Latr.

californicus *Motsch.* (Thyamis)----'Cal.

PSYLLIODES Latr.

parvicollis *Lec.*, (infra)----Cal.
convexior *Lec.*, (infra)----Cal.

CHAETOCNEMA Stephens.

irregularis *Lec.*, (infra)----Cal.

DIABROTICA.

duodecim-punctata, var.----Cal.
Galleruca 12-punctata Fabr.
vittata, var.----Cal.
Galleruca vittata Fabr.
Diabrotica trivittata Mann.

LUPERUS Geoffr.

varipes *Lec.*, (infra)----Cal.
longulus *Lec.*, (infra)----Or.

GALLERUCA Geoffr.

rudis *Lec.*, (infra)----Or.
punctipennis *Mann.*----Cal.
luctuosa *Mann.* B. M. 1852.----'R.
consputa *Lec.*, (infra)----Cal.
guttulata *Lec.*, (infra)----Cal.
morosa *Lec.*, (infra)----Cal.
canadensis *Kirby*, var.?----Or.
flavolimbata *Mann.*----Cal.

MICRORHOPALA.

vittata.----Or.

Hispa vittata Fabr.
rubrolineata *Mann.* (Odontota) ..... Cal.

CASSIDA Linn.
nobilis Linn. *Mann.* B. M. 1853, (mercat. illata?) ..... 'R.
novem-maculata *Mann.* ..... Cal.
aurisplendens *Mann.*, (Coptocycla) ..... 'Cal.

COCCINELLIDAE.

ANISOSTICTA Redt.
vittigera *Lec.* ..... Or. Cal.
Hippodamia vittigera Mann.
Naemia vittigera Muls.

HIPPODAMIA Muls.
tredecim-punctata *Muls.* Mann. B. M. 1853. ..... 'R.
Coccinella 13-*punctata* Linn.
ambigua *Lec.* Proc. Acad. 6, 131. ..... Or. Cal.
punctulata *Lec.* ibid. ..... Cal.
extensa *Muls.* ..... 'Cal.
sinuata *Muls.* ..... 'Cal.
parenthesis *Lec.* Mann., (Adonia) B. M. 1853. ..... 'R.
Coccinella parenthesis Say.
Coccinella tridens Kirby.
Hippodamia lunatomaculata Motsch.
Adonia parenthesis Muls.
moesta *Lec.* Pr. Acad. 7, 19. ..... Or.

COCCINELLA Linn.
12-maculata *Gebl.* Mann., (Harmonia,) B. M. 1853. ..... 'R.
incarnata Kirby.
trifasciata *Linn.* Mann. B. M. 1853. ..... 'R.
transverso-guttata *Fald.* Mann. B. M. 1853. ..... 'R.

5-notata Kirby.
monticola *Muls.* ..... Or.
Menetriesi *Muls.* ..... 'Cal.
californica *Mann.* ..... Cal.
subversa *Lec.* Proc. Acad. 7, 19. ..... Or.
abdominalis *Say.* ..... Cal.

MYZIA Muls.
Rathvoni *Lec.* Proc. Acad. 6, 132. ..... Cal.
subvittata *Muls.* ..... 'Cal.?

PSYLLOBORA Muls.
taedata *Lec.*, (infra) ..... Cal.

CHILOCORUS Leach.
fraternus *Lec.*, (infra) ..... Cal.

HYPERASPIS Redt.
annexa *Lec.* Proc. Acad. Nat. Sc. 6, 133. ..... Cal.
quadrioculata *Muls.* ..... Cal.
Exochomus quadrioculatus Motsch.

SCYMNUS Kug.
guttulatus *Lec.* Proc. Acad. Nat. Sc. 6, 136. ..... Cal.
pallens *Lec.* ibid. 137. ..... Cal.
debilis *Lec.* ibid. ..... Cal.
marginicollis *Mann.* ..... Cal.

SACIUM Lec.
decolor *Lec.* Proc. Acad. 6, 145. ..... Cal.

ENDOMYCHIDAE.

EPIPOCUS.
laetus *Lec.* Proc. Acad. ..... Cal.

DESCRIPTION OF GENERA AND SPECIES.

Omus Esch.

O. Dejeanii, aeneo-ater, opacus, thorace latitudine breviore, trapezoides, depresso, profunde intricato-rugoso, ad apicem striato, elytris punctatis subrugosis, foveisque profundis irregulariter impressis. Long. ·7—·8. Tab. I, Fig. 1.

Reiche, Annales de la Soc. Entom. France, 7,297; Tab. 10, Fig. 1.

Fort Vancouver, Dr. J. G. Cooper; Steilacoom, Dr. Suckley.

O. californicus, ater subopacus, thorace latitudine haud breviore, trapezoides, modice convexo, profundissime intricato-rugoso, elytris profunde punctatis, punctis vix inaequalibus. Long. ·6. Tab. I, Fig. 3.

Eschscholtz, Zool. Atlas, 5, 4; Tab. 4, Fig. 1: Reiche, Ann. Ent. Soc. Fr. 7,301; Tab. 10, Fig. 3. (copied): Mann. Bull. Mosc. 1843, 182.

San Francisco; found by me in February, floating in pools of water; a female was liberally presented to me by Mr. J. Ph. Wild.

O. Audouinii, ater, subopacus, thorace latitudine non breviore, trapezoides, modice convexo, intricato-rugoso, minus profunde in disco, margine apicali sublaevi, elytris subrugosis, punctatis, punctisque maioribus dispersis impressis. Long. ·55—·7. Tab. I, Fig. 2.

Reiche, Annales de la Soc. Entom. France, 7,297; Tab. 10, Fig. 2.

Oregon, at Fort Vancouver, Dr. Cooper. Only males were procured, but for a female, collected by the late J. K. Townsend, M.D., I am indebted to Dr. T. W. Harris.

These three species, the only ones known, form two natural divisions, according as the thorax is short and depressed, (O. Dejeanii,) or oblong and moderately convex. The two species of the latter division resemble each other closely in form, size, and sculpture, the less deeply rugous thorax of O. Audouinii at once distinguishes it; the head of that species is also less deeply rugous between the eyes than in O. californicus; the elytra are more distinctly rugous, and there is an obvious difference in the size of the punctures of the elytra; on close inspection, a similar character may be seen in O. californicus, but much less distinctly.

Pristodactyla Dej.

P. lenis, piceo-nigra, subnitida, thorace subquadrato, postice paulo angustiore, lateribus rotundatis margine subreflexo, angulis posticis obtusis rotundatis, ad basin utrinque late foveato, elytris thorace latioribus, tenuiter striatis, bipunctatis, antennis pedibusque rufo-piceis; unguibus ad basin paulo serratis. Long. ·44.

Anchomenus lenis Mann. Bull. Mosc. 1853.

Kadjak, Russian America; Baron Chaudoir. This species is closely allied to *P. advena Lec.*, but is larger. The thorax is more narrowed behind, and the sides are less broadly reflexed. I was much surprised to find the ungues of this species finely serrate from the middle to the

base, believing that such a character could hardly escape the acute observer who described it, but much greater was my surprise to find the same character in *P. mollis;* on examining the tooth of the mentum, I found that it was bicuspid, as in other species of Pristodactyla, and I am now convinced that all species placed by authors in Platynus, (Anchomenus and Agonum,) which have but two dorsal punctures on the elytra, must be removed to Pristodactyla.

Agaosoma Ménétriés.

A. californicum, valde elongatum, nigrum, nitidum, fronte profunde bifoveato, utrinque parce punctato, thorace latitudine plus duplo longiore, lateribus late rotundatis, utrinque angustato, sed postice angustiore, ad basin utrinque, et ante basin medio vage foveato, elytris thorace vix latioribus, ad basin truncatis; profunde striatis, interstitiis paulo convexis. Long. ·69, Tab. I, Fig. 5.

Ménétriés, Bull. Acad., St. Petersburg, 1843, 63: Mann. ibid. 1845, 108.

Stenomorphus californicus Chaud. Bull. Mosc. 1844, 478.

Sacramento? California; a specimen collected by Mr. Woznessensky, the only person by whom it has been found, was sent me in exchange by Dr. Klug, of Berlin. On comparing with a Texan species of Stenomorphus, yet undescribed, I find that the differences in the posterior tibiæ, to which attention was called by Mannerheim, exist in part, but hardly to the extent indicated in his comparison between this species and S. angustatus *Dej.* The rows of spines visible in Stenomorphus are replaced by stout hairs, but the deep grooves on the inner face of the hind tibiæ are also present in the Texan species. In the one now under consideration, the anterior tibiæ are internally fringed with long dense white hair, (Tab. — Fig. *a*,) while in Stenomorphus only a few scattered bristles can be seen. This difference, with that of the form, seems to indicate that the genus Agaosoma should be preserved, at least for the present.

Stenolophus Dej.

S. limbalis, olivaceo-niger, aenescens, nitidus, thorace subquadrato, latitudine breviore, lateribus modice rotundatis, basi utrinque punctulato et late foveato, limbo toto anguste testaceo, elytri thorace paulo latioribus, apice sinuatis, striis sat profundis, postice profundioribus, interstitiis planis, tertio unipunctato, epipleuris, antennarum articulo 1mo, pedibus, coxisque anterioribus testaceis; palpis piceis apice testaceis. Long. ·26.

Very abundant at San Jose, California. The anterior and middle tarsi of the male are dilated, and the last joint is deeply bilobed, as in *S. versicolor*, which this species closely resembles in form. The foveae of the thorax are broader, and the base more punctured; the posterior angles are much more distinct.

S. anceps, nigro-piceus, nitidus, thorace latitudine paulo breviore, subquadrato, lateribus rotundatis, postice subangustato, angulis posticis obtusis rotundatis, basi laevi utrinque late foveato, limbo toto rufo-testaceo, elytris cyaneo-micantibus, sutura margineque rufo-testaceis, thorace paulo latioribus, striis impunctatis, 2nda unipunctata, ad apicem oblique subsinuatis, antennarum basi, pedibus coxisque testaceis. Long. ·24.

San Francisco. Closely allied to *S. ochropezus*, but the thorax is less deeply foveate at the base, and not at all punctured; the striae of the elytra appear less deep.

S. tener, valde elongatus, depressus, piceus nitidus, thorace elytrorum margine et apice rufescentibus, illo subcordato, latitudine non breviore, postice angustato, lateribus subsinuatis, angulis posticis rectis, ad basin utrinque foveato, vix punctato, elytris thorace paulo latioribus, parellelis, ad apicem oblique subsinuatis, striis sat profundis, 2nda unipunctata, antennarum basi, palpis pedibusque testaceis. Long. ·16.

One specimen found at San Jose, California. Resembles in form *S. alternans* Lec.—(Trans. Am. Phil. Soc. 10, 386; Aepus et Badister testaceus *Lec.*)

S. californicus, niger, nitidus thorace subquadrato, latitudine paulo breviore, postice angustiore, lateribus rotundatis, angulis posticis obtusis vix rotundatis, ad basin punctulato utrinque subfoveato, elytris thorace latioribus, elongatis, parellelis ad apicem haud sinuatis, striis profundis, 3ia unipunctata, stria scutellari nulla; antennis piceis, palpis pedibusque flavis. Long. ·10.

Found in every part of California. Belongs to the division of the genus which contains most of the North American species of Acupalpus described by Dejean; the tarsi of the male are hardly dilated.

Promecognathus Chaud.

P. laevissimus, niger, nitidissimus, mandibulis porrectis, capite haud brevioribus, capite utrinque bistriato, thorace latitudine longiore, postice angustato, et lateribus subsinuato, angulis posticis subobtusis, ad basin marginato, et utrinque subfoveato, elytris thorace latioribus, ovalibus postice valde declivibus. Long. ·43—·46. Tab. I, fig. 4.

Chaudoir, Bull. Mosc. 1846, 524.

Eripus laevissimus Dejean, Sp. Gén. 4, 11: Mann. Bull. Mosc. 1843, 210.

San Jose, California, on rocky hills, under stones. I have failed to perceive any relationship between this genus and Stomis, near which it is placed by Baron Chaudoir. By the form of the mentum and labrum, as well as by the structure of the antennae, it seems closely allied to Pasimachus and Scarites, although differing by the anterior tibiae, which are not palmate.

Cychrus Fabr.

C. tuberculatus, ater, opacus, capite valde rugose punctato, plano, lateribus subcarinatis, fronte late bisulcato, et medio elevato, thorace profunde confluenter punctato, ad apicem et basin truncato, postice angustato, angulis posticis obtusis, ad basin transversim impresso et utrinque foveato, elytris ventricosis, tuberculis parvis nitidis obsitis, tuberculisque maioribus serie triplici positis, quarum tuberculo intermedio postico maior. Long. ·88. Tab. I, fig. 6.

Harris, Bost. Journ. Nat. Hist, 2,200.

A specimen collected in Oregon by the late Dr. J. K. Townsend was given to me by Mr. Willcox.

Carabus Linn.

C. taedatus, niger, thorace latitudine breviore, minus convexo, postice subangustato, lateribus antice rotundatis, pone medium anguste reflexis, angulis posticis modice productis ad apicem rotundatis, disco parcius lateribus et basi dense punctato et intricato-rugoso, elytris saepe piceo-purpureis, thorace sesqui latioribus, elongatis, subtiliter dense striolato-punctatis, foveisque magnis minus profundis, serie triplici impressis. Long. ·92. Tab. I, fig. 7.

Fabr. Ent. Syst. emend. 1, 127; Syst. El. 1, 174: Oliv. Ins. 35. tab. 2, fig. 11; Enc. Méth. 5, 328.

Carabus baccivorus Fischer, Entom. 1, 87; tab. 7, fig. 11; 3, 221: Esch. Bull. Mosc. 6, 99: Dej. Spec. Gen. 2, 167.

Carabus seriatus Wiedemann, Germ. Magazin, 4, 109.

Russian America and Oregon, abundant. This species long ago described by Fabricius, probably from the collection of Captain Cook's voyage, has been lost sight of in modern times, or rather has been made known under other names; the insect described by Fabricius was in Sir Joseph Banks' collection, and the figure given by Olivier is quite recognizable.

C. oregonensis, cyaneo-niger, thorace fere opaco, latitudine vix breviore, minus convexo, utrinque angustato, lateribus rotundatis, angulis posticis modice productis, apice rotundatis, lateribus pone medium subreflexis, elytris thorace fere duplo latioribus, subtiliter striolato-punctatis, foveisque minus profundis serie triplici impressis. Long. ·85.

Lec. Proc. Acad. Nat. Sc. 7, 16.

One male from Prairie Paso; Dr. Cooper. Closely related to *C. taedatus*, but the thorax is proportionally much smaller and narrower, and much more densely and finely rugose; the rugae of the head are also smaller, and the impressions less deep; the striae and foveae of the elytra are less deeply marked.

Calosoma Fabr.

C. calidum Fabr. A specimen collected at Steilacoom, by George Gibbs, esq., cannot, after much examination, be separated from this common species. It is rather narrower than any other specimen I have seen, and the coppery foveae of the elytra are larger and less numerous.

C. cancellatum, nigro-aeneum, crassiusculum, thorace latitudine plus duplo breviore, dense intricato-rugoso et punctato, basi utrinque late foveato, lateribus latius rotundatis pone medium modice reflexis, angulis posticis paulo productis rotundatis, elytris oblongis, thorace parum latioribus, saepe virescentibus, seriatim punctatis, transversim rugosis, foveisque aeneis serie triplici impressis, interstitiis catenatim paulo elevatis, tibiis intermediis rectis. Long. ·8. Tab. I, fig. 8.

Eschscholtz, Zool. Atlas, 5, 23: Mann. Bull. Mosc. 1843.

Calosoma aenescens Lec. Proc. Acad. Nat. Sc. 7, 16.

Fort Vancouver, Dr. Cooper; Sacramento, California, Mr. Wittick. Shorter and less convex than *C. calidum*, approaching in form some species of Callisthenes; the thorax is hardly narrowed behind, and the posterior angles are distinctly, though broadly produced. The wings are well developed, and the other joints of the antennae are equably pubescent. The intervals between the rows of punctures of the elytra are marked with a few transverse striae; the spaces between the impressed foveae are distinctly elevated, and smoother than the other parts of the elytra.

The specimens collected by Dr. Cooper, in Oregon, differ from those found in California, by the less distinct green tinge of the elytra, which are also less densely rugous; on this account I was disposed to regard them as indicating a species different from that of Eschscholtz, but the subsequent receipt of two specimens from California, which, with many other valuable species, were presented to me by Mr. S. S. Rathvon, enables me now to pronounce these differences as

merely individual. One of the characters mentioned by Eschscholtz, that the spaces between the rows of punctures of the elytra are alternately more elevated, seems liable to variation: in one specimen it is seen; in another, the middle interval in each space between the catenated rows appears a little broader than those next the elevations; but in the other specimens no difference in breadth or elevation can be perceived.

C. discors, apterum, minus elongatum, nigrum, thorace brevi, valde intricato-rugoso, lateribus valde rotundatis, margine subdepresso, basi emarginato, medio truncato, elytris ovalibus thorace paulo latioribus, confertim substriatis, striis interstitiisque uniseriatim punctatis, foveisque obsoletis serie triplici impressis. Long. ·75—·82. Tab. I, fig. 9.

San Francisco, Mr. Child; Sacramento, Mr. J. Wittick. This species, by its short robust form, and by the absence of wings, simulates Callisthenes, but the antennae are as in other species of Calosoma.

Body black, without metallic lustre. Head elongated, rough with confluent wrinkles and punctures; antennae with the third joint strongly compressed, twice as long as the fourth, fifth and following joints entirely pubescent. Thorax more than twice as wide as the head, and fully twice as wide as its length, not convex, margined, with the sides somewhat depressed behind, but not reflexed; base transversely impressed, and faintly bifoveate; middle part truncate, posterior angles moderately produced, hardly acute at apex. Elytra oval, moderately convex, a little wider than the thorax, marked with faint approximate striae, which are strongly punctured; the narrow interstices are also marked, each, with a row of punctures equal to those of the striae; in certain lights three rows of very indistinct foveae may be seen in the usual position.

Notiophilus Dumeril.

N. nitens, aeneus, fronte multistriato, thorace transverso, quadrato, postice vix angustato, toto subtiliter rugoso, limbo late punctulato, elytris stria scutellari duplici, suturali dorsalibusque septem remotis subtilibus punctatis, (duabus externis fere obliteratis,) externa ad apicem exarata, et cum suturali iuncta, interstitiis nitidis, tertio fovea ante medium duabusque versus apicem impresso, antennis basi testaceis. Long. ·21.

One specimen, Prairie Paso, Oregon, Dr. Cooper. The punctures are much finer than in any of the species known to me from the Atlantic States, and the thorax is less narrowed towards the base. The striae are not impressed as in *N. sylvaticus*, but are merely rows of punctures.

Trachypachys Motsch.

T. inermis, nigro-aeneus, oblongo-ovalis, capite aequali, fronte lateribus marginato, thorace transverso, lateribus antice rotundatis, postice transversim impresso et uniseriatim punctato, utrinque profunde foveato, et extrorsum subcarinato, elytris seriatim punctatis, ad latera et apicem laevibus. Long. ·2. Tab. — fig. 10. Motsch. Carab. Russl. p. 16, (note.)

Trachypachus Holmbergi, Mann. Bull. Mosc. 1853.

Two specimens, Shoalwater Bay, Oregon, Dr. Cooper. This interesting genus was founded upon Blethisa *Zetterstedtii* Gyll., a rare insect of northern Europe. From the rarity of this species, authors who have not had an opportunity of examination have much mistaken the haracters of the genus. So far from being allied to Blethisa, it has the anterior acetabula

dehiscent, and the mesosternum at the tip compressed and carinate as in Notiophilus. From the latter genus it differs by the very short emarginate labrum, by the more distinct, but also bicuspid mentum-tooth, and by the less prolonged prosternum. Of the anterior tarsi of the male, the first and second joints are dilated; the third and fourth are small an equal.

AMPHIZOIDAE.

Coleoptera pentamera, pedibus ambulatoriis, antennis filiformibus; prothoracis episternis a noto sutura divisis, acetabulis anticis postice hientibus; coxis anticis et mediis globosis, posticis transversis ad marginem corporis extensis, contiguis, antice truncatis, postice ad insertionem pedum elevatis; mento magno emarginato, cum gula omnino connato, (sutura nulla;) maxillis lobo interno curvato acuto, intus parce spinoso, galea elongata palpiformi exarticulata; abdomine sex-articulato, articulis anterioribus tribus connatis.

n the above diagnosis I have placed an assemblage of characters which seem fully to justify the establishment of a separate family for the reception of the very remarkable Amphizoa *insolens*. A detailed description may be found in the 6th volume of the Proceedings of the Academy of Natural Sciences of Philadelphia, (p. 227;) I there express the opinion that it would not enter any family of Adephaga as then constituted, and brief allusion was made to the large size of the posterior coxae, which cut off all connexion between the metathorax and the ventral abdominal segments, as indicating an affinity with the Dytiscidae, a view which, also, seemed to be confirmed by the subglabrous antennae; at the same time the ambulatorial legs showed a tendency towards the Carabidae. Since there appeared to be, however, no very strong resemblance in the structure of the legs, though ambulatorial, with those of Carabus, I did not insist very strongly on the latter affinity.

Lacordaire has, in the excellent work now being published by him on the Genera of Coleoptera, (Vol. 1, p. 409,) introduced an abstract of the description given by me, but not considering the characters sufficiently important to define a new family, has placed the genus as a tribe of Dytiscidae, equal in value to Pelobius. A misunderstanding of some expression used by me has, unfortunately, led him to place in the diagnosis of the tribe, 'hanches posterieures . . . . . non contigues au côté interne;' which is not the case; the coxae come together on the median line, as in Pelobius, Dytiscus, &c., but differ in the anterior margin being transverse and rectilinear, while in all true Dytiscidae (Haliplus and Cnemidotus being excluded) the anterior outline is rounded; the posterior lobes above the insertion of the hind feet are more distant and less elevated. The second ventral segment is prolonged anteriorly in an obtuse angle, and articulates with the coxae, so that the first segment is entirely lateral, as in Carabidae. From this it results that no part of the metathorax reaches the ventral segments of the abdomen, all communication being cut off by the coxae extending to the sides of the body.

Another character not found in any other Adephagous insect, is the complete union without any visible suture between the gula and mentum; this fact is of great importance, and upon it the argument for the separation of this as a new family must to a considerable extent rest. I regret that it was omitted in my former description, although observed while making a re-examination for the present report; to Dr. Schaum, also, I owe my acknowledgments for a

very interesting letter on Amphizoa, in which my attention was called to this omission, and to the misstatement that the galea of the maxillae is biarticulate; a more careful view shows that it is in reality undivided, and that I was deceived by a cross reflection of light.

With regard to the affinities towards the Tenebrionidae, upon which Dr. Schaum lays great stress, I confess that I have failed to appreciate them; the sculpture of the femora and tibiae are, indeed, similar to that of Tentyria, but the joints of the tarsi are puffed out below, and not concave, with a marginal series of short spines, as in Tentyria and Carabidae. The anterior coxae are entire in all Tenebrionidae, while in Amphizoa they are open; the posterior coxae are also entirely different in form and position from all Tenebrionidae known to me.

The antennae, as observed by Dr. Schaum, though nearly glabrous, are not those of a Dytiscus, but still less are they those of a Tenebrionite; still it must be admitted that the homogeneous structure of the outer articulations, without any lateral spongy portion resembles more nearly what is seen in Dytiscidae, than in any other family of Coleoptera.

To conclude then this portion of the essay, I would briefly state, that the anomalous structure of Amphizoa is such as to exclude it absolutely from any known family, and that its position must be in a new family, between Carabidae and Dytiscidae, without any distinct point of osculation with either; Pelobius on the one hand, and Opisthius on the other being the nearest allies.

As these conclusions are much at variance with those duduced by others, I take the liberty of transcribing a portion of Dr. Schaum's letter, with a view to hasten as far as possible the time of harmonizing the diverse results, which are always obtained in a case of such difficulty.

"Amphizoa has, indeed, the posterior coxae of Pelobius, but there seems to be a greater difference between its coxae and those of the typical Dytisci than between its coxae and those of Ozaena, for instance. This is, however, the only character which I can find to agree with any Dytiscus. The antennae are glabrous, but they are the antennae of a Heteromerous insect, and not those of a Dytiscus. All the other characters seem to me to be at variance with the water beetles; configuration of prosternum, metasternum, legs, number of visible abdominal segments, and above all the parts of the mouth! * * * The legs are also different from the type of the Carabidae; they are glabrous and the joints are prefectly those of Tentyria. Even the dilatation of the coxae is found in the the Heteromerous tribe. But what now is this most anomalous insect? In my opinion a most extraordinary Carabus with many characters of the Heteromera. In spite of the exarticulated exterior lobe (of the maxillae) it must be referred to the Adephaga on account of its mentum, the number of united abdominal segments, and the number of tarsal joints. I prefer much more to put it among the Carabi than among the Dytisci, on account of the constricted thorax, the sternal segments, the number of abdominal segments, the texture and structure of maxillae, and the ambulatorial legs. The analogies to the Heteromera are most striking; antennae, legs, even the coxae are those of Tentyria. It is interesting that this form occurs in California, where the Heteromerous type is so prevalent."

Having now laid both opinions before the reader, I leave the subject to the consideration of systematists, illustrated by the excellent figures made by Mr. Hitchcock of the various parts of the under surface, Pl. I, fig. 11, *a* and *b*, the antennae 11 *c*, anterior leg 11 *d*, and posterior leg 11 *e*.

AMPHIZOA Lec.

Antennae 11-articulatae filiformes glabrae, articulis internis punctatis; palpi breves articulis

cylindricis; prosternum postice productum rotundatum, mesosternum antice carinatum declive, postice late excavatum; tarsi articulo ultimo elongato, subtus ad apicem utrinque emarginato, et medio rotundatim producto (sicut in Carabis,) postici articulo primo secundo sesqui longiore, omnibus subtus convexis, pubescentibus haud setosis; unguiculi simplices.

A. insolens, atra, opaca, subvirescens, glabra, thorace scabro, canaliculato, antrorsum angustato lateribus suberratis, ad medium subangulatis, postice subangustato, angulis posticis acutis elytris ovalibus, substriatis, scabro-punctatis, thorace duplo latioribus. Long. 52°. Tab. —, fig. 11.

Lec. Proc. Acad. Nat. Sc. 6, 288.

Sacramento? California; collected by J. Child, esq, and given me by Mr. S. S. Rathvon. Color dull black, tinged with greenish, without lustre. Head irregularly rugous and punctulate, with two shallow impressions between the antennae. Labrum covering the obtuse mandibles, slightly and broadly biemarginate in front. Thorax twice as wide as the head, flat, scabrous, sides subserrate, strongly narrowed from the middle to the apex, slightly narrowed and subsinuate behind; base very broadly bisinuate, posterior angles acute; disc channelled, with a shallow impression each side at the base, and a broad transverse one before the middle. Elytra broadly oval, slightly convex, nearly twice as wide as the thorax, scarcely one half longer than wide, scabrous with shallow punctures, striate with nine slightly impressed grooves, which appear coarsely and indistinctly punctured. Scutellum flat, broad, acute at apex. Under surface of the body covered with shallow confluent punctures and wrinkles. Legs scabrous with fine elevated punctures. No sexual difference was observed between five specimens.

AGABUS Leach.

A. brevicollis, obtuse ovalis minus convexus, totus niger vix aenescens, (mas alutaceus, femina subtiliter reticulata,) thorace latitudine triplo breviore antrorsum valde angustato, lateribus late rotundatis cum elytris angulum haud formantibus, his seriebus solitis punctorum minus distinctis. Long. ·35—·44.

Upper Sacramento river; Mr. Child. Resembles in form *A. stagninus*, but is very different in its color and other characters. The punctures of the elytra are less numerous than usual, and the rows become indistinct towards the tip—not by being confused, but from the roughness of the surface.

ACILIUS Leach.

A. latiusculus, ovalis minus convexus, supra piceo flavoque irroratus, capite thoraceque maculis solitis flavis, elytris (feminæ) punctulatis, limbo fasciaque postica irregulari flavis, sulcis utrinque quatuor exaratis, primo breviore, alterisque ad basin haud extensis, subtus cum pedibus testaceis, suturis fuscis. Long. ·52; lat. ·31.

One specimen from the Upper Sacramento; Mr. Child. This species is broader than *A. fraternus*, and the outer furrows of the elytra are a little longer; the pale color of the under surface will at once distinguish it from that species, and from *A. simplex* Lec., found in southern California. *A. abbreviatus* Mann., which was found by Dr. Cooper at Fort Vancouver, is testaceous beneath, but the form of body is still narrower than in *A. fraternus*.

DYTISCUS Linn.

D. sublimbatus, elongato-ovalis, postice vix latior, supra nigro-piceus, thorace latitudine triplo breviore, lateribus subrotundatis late testaceis, linea angusta subapicali alteraque minus

distincta basali medio latiore signato, elytris testaceo-marginatis pone medium versus marginem longitudinaliter leviter impressis, lineis solitis punctatis distinctis; subtus cum pedibus testaceus, suturis abdominisque lateribus fuscis; coxarum posticarum laciniis brevibus valde divergentibus rotundatis. Long. 1.03.

One male, Prairie Paso; Dr. Cooper. Narrower and less convex than usual, and thus resembling in form *D. conformis*, perplexus, &c., of Europe. The thoracic basal yellow margin is slender, it bends forwards half way between the basal angle and the scutel, and is then continued across parallel with the base, forming the outline of such a mark as is seen in *D. anxius;* the basal edge and the scutel are reddish-yellow; the line at the apex touches the margin only towards the angles; in the middle it is bounded by the line of punctures; the sides converge anteriorly, and are very broadly but regularly rounded. The elytra are very thickly punctulate, except towards the base, where they become almost smooth; the submarginal longitudinal impression extends from the middle half way to the tip, but it is not well defined; the subapical yellow band, usually seen on the elytra, is entirely wanting.

Necrophorus Fabr.

N. pollinctor, niger, thorace ovali transverso, marginibus late depressis, disco tenuiter canaliculato, fortius transversim impresso, elytris parcius punctatis, macula latterali ad medium in epipleuram extensa, alteraque parva lunata ante apicem rubris; pectore flavo-pubescente; abdomine breviter griseo-ciliato, tibiis posticis rectis. Long. ·58.

Lec. Proc. Acad. Nat. Sc. 7, 19.

Collected by Dr. Cooper, on the journey from Fort Vancouver to Yokolt Plains. Resembles in the form of the thorax, *N. sexpustulatus*, but the impressions are deeper. The margin is punctured; the disc in one specimen is smooth, in another, obsoletely punctulate. The antennæ are entirely black. I have not changed the name of this species, since *N. pollinctor* Mann. appears merely a slight variation of *N. maritimus*.

Thinopinus Lec.

T. pictus, testaceus vel pallidus, capite thoraceque nitidissimis hoc fascia interoculari ad latera postice flexa ochroleuca nigro-variegato, thorace postice subangustato, macula utrinque maxima annulari postice interrupto nigra, elytris obsolete strigosis, annulo lato nigro ad humerum interrupto signatis, thorace duplo brevioribus, abdomine supra bifariam nigro-signato. Long. ·55—·75, Tab. I, Fig. 12.

Lec. Ann. Lyc. Nat. Hist. of New York, 5,216.

Trichocanthus variegatus, Motsch. Etudes Entom., 1852, p. 78; Mann. Bull. Mosc., 1853.

Found on the sea coast of California, as far south as San Diego; on the wet sand below high water mark, on the open ocean shore; also found in Russian America, according to Motschulsky. The very short elytra, which overlap each other at the suture, as in Xantholinus, and the absence of wings, renders this very distinct from every other genus of the tribe of genuine staphylinidæ.

Hister Linn.

H. sellatus, oblongo-ovalis convexus niger nitidus, thorace latitudine duplo breviore bistriato, interstitio antice punctis paucis notato, lateribus et apice longe flavo-ciliatis, elytris rubris,

margine apicali maculaque communi scutellari nigris, striis utrinque tribus externis integris, reliquis obliteratis; tibiis anticis bidentatis, posticis seriebus transversis extrorsum spinulosis. Long. ·25.

One specimen from San Francisco, given me by Mr. Wild. Smaller and narrower than *H. arcuatus*, to which it is allied. The thighs are entirely black, and the posterior tibiæ are more compressed. The sutural stria is entirely wanting, and the epipleuræ are marked with a single lateral stria; the pygidium is equably and coarsely punctured.

Saprinus Leach.

S. estriatus, oblongo-rotundatus, æneo-niger, thorace confertissime aciculato, callo utrinque rotundato, spatioque basali sublaevibus, elytris confertissime aciculatis striis dorsalibus nullis, macula pone basin subsuturali altera humerali tertiaque intermedia minore nitidis lævibus, stria externa elongata flexuosa parum distincta. Long. ·13.

One specimen from Oregon, collected by Dr. Townsend. This species belongs with S. fraternus, mancus, bigemmeus, &c., to group 8 of my division of the genus, (Proc. Acad. Nat. Sc. 6,) in which the front is transversely margined and angularly impressed, and the prosternum compressed with the striae distinct. The anterior tibiæ were probably four-toothed, as in S. bigemmeus, but the teeth, with the exception of one at the middle are entirely worn off.

Teretrius Er.

T. obliquulus, oblongus, cylindricus, niger nitidus punctatus, elytris striola obliqua ad basin versus humeros impressis; antennarum clava, pedibusque piceo-rufis, tibiis anticis subito dilatatis, sexdenticulatis. Long. ·13.

Sacramento; Mr. Wittick. This species resembles in form *T. picipes*, but is considerably larger, being fully twice as long; that species is more finely punctured, and has no oblique stria at the base of the elytra.

Epuraea Er.

E. nubila, elongato-ovalis, testacea, punctulato-rugosa, subtiliter flavo-pubescens, thorace antrorsum angustato, lateribus rotundatis depressis, angulis posticis subrectis, elytris anguste marginatis, macula utrinque ad medium nigro-picea ornatis, ad apicem singulatim rotundato-truncatis. Long. ·10.

One specimen, San José, California. This species is a little wider than *E. parallela* Lec., but is narrower than usual; the thorax is about twice as wide as its length; the base is broadly rounded in the middle, and slightly sinuate towards the basal angles, so that the latter become nearly rectangular, and not rounded. The elytra are about one-half longer than wide.

Omosita Er.

O. inversa, nigra, opaca, subtiliter griseo-pubescens, confertim subtilius punctata, thorace piceo-rufo, latitudine plus duplo breviore, antrorsum magis angustato, lateribus rotundatis late depressis, disco canaliculato et utrinque subfoveato, elytris testaceis, macula utrinque basali,

punctoque ad medium, maculisque pluribus ad marginem et pone medium nigris confluentibus variegatis, apice coniunctim rotundatis. Long. ·13.

San José, California. Larger than *O. colon*, and distinguished by distinctly channelled and less convex thorax, by the greater number of the dark spots of the elytra being behind the middle, while in *O. colon* the reverse is the case.

Meligethes Steph.

M. rufimanus, ovalis, virescenti niger subnitidus, dense subtilius punctatus, breviter cinereo-pubescens, thorace lateribus antice rotundatis, angulis posticis obtusis tibiis anticis rufis paulo dilatatis extrorsum serrulatis, posterioribus dilatatis dense spinulosis. Long. ·09—·10.

San José, California, on the flowers of Ranunculus. The thorax is nearly twice as wide as long; the sides are almost parallel behind the middle, but converge anteriorly, and are considerably rounded; the elytra are broadly rounded at tip, and are one-half longer than their width.

M. moerens, ovalis, nigro-virescens, subnitidus dense subtilius punctatus, tenuiter griseo-pubescens, thorace lateribus rotundatis angulis posticis obtusis, tibiis anticis minus dilatatis, ad basin subtilissime, ad apicem distinctius crenulatis, posterioribus dilatatis extrorsum dense spinulosis. Long. ·10.

Oregon. Very similar to *M. rufimanus*, but differs in the sides of the thorax being more rounded, with the posterior angles more obtuse; the anterior tibiæ are narrower, and the crenulation towards the base becomes so fine as to be hardly visible.

M. seminulum, ovalis convexior, niger nitidus, thorace sat dense subtilius punctato, tenuiter marginato, latitudine plus duplo breviore, lateribus rotundatis, angulis posticis obtusis, elytris subtilius sat dense punctatis, tibiis omnibus modice dilatatis, anticis versus apicem subtiliter crenulatis posterioribus extrorsum spinulosis. Long. ·08.

Oregon, one specimen. The pubescence has probably been removed by the alcohol in which the specimen was preserved. Smaller and more convex than the others, and the margin of the thorax is narrower; the thorax itself is wider and more rounded on the sides. The anterior tibiæ at the base appears smooth.

Amphicyrta Er.

A. chrysomelina, aptera, longius ovata, antice angustior piceoaenea, nitida convexa, dense subtiliter punctulata, tarsis piceis, tibiis anticis extrorsum obtuse angulatis. Long. ·35. Tab. —, fig. 14.

Erichson, Germ. Zeitschr. 4, 40; Lec. Proc. Acad. Nat. Sc. 7, 116.

Oregon: collected by the late Dr. J. K. Townsend, and given me by Mr. Edwin Willcox.

Cremastochilus Knoch.

C. angularis, ater opacus, breviter setosus, thorace confertim punctato, lateribus antice rotundatis, postice obliquis, angulis anticis foveatis acutis, posticis productis elevatis acutis, impressione obliqua definitis, elytris punctis minus profundis ellipticis; mento concavo postice acuminato. Long. ·5.

One specimen from Sacramento, collected by Mr. Wittick. This, in form, size, and general

appearance, resembles *C. canaliculatus*, but the mentum is of a different form, and on comparison many other differences may be seen. From *C. Schaumii*, Lec. (Proc. Acad. Nat. Sc. 6, 231) it differs by the smaller size, less rounded sides, but more acute angles of the thorax, and by the posterior angles being separated by a small but deep oblique impression; near the margin of the elytra may be seen a few whitish tranverse undulated lines.

Tryssus Er.

T? comatus, nitidus, capite obscuro, confluenter punctato, clypeo concavo rotundato, fortiter marginato, thorace luteo-ferrugineo, marginibus longissime flavo-pilosis, lateribus valde rotundatis, angulis anticis acutis, confertim punctato, versus latera utrinque foveato, elytris piceo-testaceis, ad marginem flavo-pilosis, obsolete punctatis, stria suturali profunde exarata, propygidio dense punctato, pubescente, pygidio parce piloso et punctulato, nitido: subtus ferrugineus, femoribus et pectore longe pilosis, abdomine glabro, articulo sexto postice parce fimbriato. Long. ·68.

One specimen, Sacramento, Mr. Wittick. This is the first appearance of the group Macrophyllidae in America; it differs from the genuine Melolonthidae by the segments of the abdomen being separate, with distinct sutures. On account of the 9-jointed antennae with three jointed club, I have referred it to a genus constructed by Erichson (Ins. Deutchl.) for some South African species; the ungues are cleft, (as required by his description,) each division being broad and acute, the inferior one is a little short; the tarsi are longer than the tibiæ, and the last joint is armed with a small tooth beneath, near the tip. The labrum is large and emarginate, and the epimera of the metathorax are broad.

Diplotaxis Kirby.

D. brevicollis, ferrugineo-picea, oblonga nitida, capite confertim punctato, sutura frontali distincta, clypeo late emarginato, margine anguste reflexo, thorace latitudine triplo breviore, punctato, antrorsum angustato, antice transversim impresso, ad angulos posticos foveatim excavato elytris serie suturali, quatuor per paria approximatis, quinqueque externis punctatis, interstitiis inter paria et suturam disperse punctatis; pygidio grosse punctato. Long. ·45.

Steilacoom, Washington Territory; George Gibbs, esq. One specimen.

D. subangulata, oblonga, nigra nitida, clypeo confertim punctato marginato, lateribus obliquis ad apicem late truncato, thorace sub-hexagono, sat punctato, latitudine plus sesqui breviore antice angustiore, lateribus medio obtuse angulatis et rotundatis, angulis posticis obtusis vix rotundatis, elytris oblongis thorace latioribus, punctis minus subtilibus seriatim digestis (seriebus internis confusis); pygidio confluenter grosse punctato. Long. ·34.

Oregon. Similar in appearance to many others, but readily known by the characters given.

Dichelonycha Kirby.

D. valida, elongata, nigro picea, supra parce subtus densius albopubescens, thorace brevi hexagono, inæqualiter grosse punctato vage impresso, modice canaliculato, elytris confertim rugose punctatis, fusco æneis viridi tinctis, margine, antennis pedibusque testaceis. Long. ·55.

One specimen; San Francisco, Mr. Child. Larger than any other species known to me. The New Mexican *D. sulcata*, Lec., (report of Captain Pope's expedition,) has the thorax

unequally punctured, but the impressions and dorsal channel in that species are much deeper, while the elevated spaces are almost smooth.

D. fulgida, elongata, rufo-picea, cinero pubescens, thorace pube subflava densius vertito, punctato subcanaliculato, latitudine sesqui breviore, antrorsum angustato, lateribus rotundatis, pone medium sinuatis, postice parum angustato, angulis posticis prominulis, elytris thorace paulo latioribus rugose punctatis, lineis duabus solitis parum distinctis, viridiæneis, epipleuris rufo-piceis, pedibus testaceis, tibiis tarsisque obscuris. Long. ·37.

Steilacoom; Dr. Suckley. A little broader than *D. elongata*, and having the thorax formed as in *D. testacea* and *Backii*, from which it differs in color.

Cerylon Latr.

C. simplex, castaneum nitidum, elongatum minus depressum, thorace latitudine paulo longiore, lateribus postice parallelis, antice rotundatis, sat dense punctato, elytris striis punctatis fortiter impressis, interstitiis subconvexis. Long. ·10.

San José, California. The elytra are regularly although slightly convex transversely, and not at all flattened on the disc, as in *C. castaneum* and *unicolor*. The intervals between the striæ are somewhat convex, very finely and sparsely punctulate. The thorax is without discoidal impressions, and even the basal ones are hardly perceptible.

Atomaria Kirby.

A. laetula, oblonga, nigra, convexa, nitida, minus dense punctata, parce albo-pubescens, thorace convexo, rufo, antrorsum angustato, ad basin late rotundato et transversim impresso, elytris convexis, rufis, fascia lata nigro-picea ad medium ornatis, antennis pedibusque rufo-testaceis. Long. ·06.

Variat supra nigra, elytrorum apice late rufo-testaceo.

San José, California. Belongs to the second division of Erichson (Ins. Deutsch. 385,) having the antennæ more distant from each other than from the eyes; near the European *A. unifasciata*, from which it differs by the less dense punctuation.

Pedilophorus Steffahny.

P. acuminatus, ovatus apterus, convexus, utrinque attenuatus, supra aeneus nitidus, cinereo-pubescens, thorace subtilius, elytris parcius punctatis; subtus niger fortius punctatus cinereo-pubescens, tarsis piceis articulis tertio longe lobato. Long ·16.

Morychus acuminatus, Mann. Bull. Mosc., 1852, 341.

Sitkha, Baron Chaudoir. Much broader than the next species, and gradually narrowed each way from the base of the elytra; the latter are more sparsely punctured, and the pubescence, though not dense, is coarser.

P. oblongus, oblongo-ovalis, apterus, antice subacutus, convexus aeneus nitidus, subtilius cinereo-pubescens, thorace subtiliter, elytris distinctius punctatis; subtus niger, fortius punctatus, cinereo pubescens, tarsis piceis articulo tertio longe lobato. Long. ·18.

Pedilophorus acuminatus ‡ Lec. Proc. Acad. Nat. Sc. 7, 115.

Oregon. The body is acutely narrowed from the base of the thorax forwards; the thorax is a little more finely punctured than the elytra; the latter are nearly parallel on the sides, and obtusely rounded behind.

SERICA McLeay.

S. anthracina, ovata, nigra fere opaca, cyaneo-micans, clypeo punctato, valde marginato, lateribus fere parallelis, ad apicem late emarginato, thorace brevi confertim punctato, antrorsum valde angustato, lateribus rotundatis, elytris striatis, punctatis, ad apicem late truncatis. Long. ·25—·35.

Oregon, Dr. Townsend and Col. McCall; San Francisco, Mr. Child; Sacramento, Mr. Wittick. The small specimen is reddish brown, but is perhaps immature.

CAMPTORHINA Kirby.

C. serotina, oblonga, obscure ferruginea, capite punctato, margine reflexo, antico late biemarginato; thorace subtiliter punctato, linea dorsali fere laevi, convexo, lateribus valde rotundato, elytris leviter sulcatis, sulcis confertim punctatis, interstitiis punctis paucis notatis, pygidio confertim punctato. Long. ·42.

One specimen, Sacramento, collected by Mr. Wittick. Of the size and form of *C. vespertina* Lec. (Serica vespertina *Schönh.* Camptorhina atricapilla *Kirby*,) but with the thorax finely punctured, and the elytra less sulcate and less coarsely punctured.

HOPLIA Illiger.

H. irrorata, oblonga, nigra, squamulis griseis setisque intermixtis vestita, clypeo antice truncato, thorace antrorsum angustato, lateribus valde rotundato pygidio abdomineque densius squamosis, tibiis anticis bidentatis, tarsis anterioribus unguiculis fissis, interiore duplo breviore. Long. ·28.

Oregon, Dr. Townsend; California, Mr. Child. The antennae are 9-jointed. The elytra are sometimes reddish brown.

PLEOCOMA Lec.[1]

P. fimbriata, latiuscula, ovalis, parum convexa, nigra, nitida supra glabra, capite inter cornua excavato laevi, occipite subtiliter rugose punctato, thorace latitudine fere triplo breviore, antrorsum valde angustato, lateribus rotundatis, parce punctulato, antice modice declivi, elytris stria suturali, alterisque 8 per paria approximatis punctatis parum distinctis, interstitiis sat dense punctatis; ad marginem et subtus, dense et longe flavo-villosa. Long. 1.05. Tab. I, fig. 13, (antenna 13*a*.)

Mas capite antice in capite furcato protenso, vertice breviter cornuto. Lec. Proc. Acad. Nat. Sc. 8.

Antennae (maris) 11-articulatae, articulo 3io elongato, 4to intus, ad basin producto, 6-11 laminatis, clavam heptaphyllam formantibus. Maxillae et mandibulae invisae, minutae.

On the eve of my departure from the country, perfect specimens of this most curious genus have arrived, but do not, in the hasty manner in which I am obliged to study them, throw much light upon its affinities. Although agreeing with Geotrupidae in the eleven-jointed antennae, the form of the antennae is entirely anomalous in that and allied groups, and the small size of the oral organs would seem to indicate a new group between Geotrupidae and Copridae.

These specimens are much smaller than the other one, being only .8 of an inch long. The figure is made from the one first obtained, but the antennae are supplied from the smaller specimens, those of the former being very imperfect, though still sufficiently preserved to be correctly described in the text, having only four long leaves, and one short one in the club. These differences may be sexual, at least no adequate specific difference on comparison, unless it be in the thorax, which, in the large specimen, is very finely and sparsely punctured, while in the small ones it is quite densely punctured and clothed sparsely with long hairs like those on the margin.

One specimen, California, Dr. Heermann; given me by Mr. Haldeman. As the oral organs and the abdomen are destroyed, I cannot tell whether this genus belongs to the Dynastides or Geotrapides; in either case the four-jointed antennae club is equally remarkable. The affinities, as far as I can understand them, seem to be rather with Geotrupes.

Canthon Illiger.

C. simplex, latiusculus, minus convexus, niger alutaceus opacus, thorace lateribus integerrimis, medio angulatis, disco parce subtiliter punctato, elytris parce subtilius punctatis, striis obsoletis vix impressis; clypeo antice reflexo, sexdentato, dentibus mediis magnis, lateralibus parvis; pedibus anticis in fossulis haud receptis. Long. ·22—·36.

Oregon and California. Resembles in appearance *C. nigricornis*, but the elytra are less narrowed behind. The small tubercle, which interrupts the margin of the thorax on the under surface before the middle in the other species, is here entirely wanting, and the under surface is hardly excavated for the reception of the anterior feet.

Aphodius Illiger.

A. pectoralis, oblongus convexus, niger nitidus, capite subtiliter punctulato, quadri-tuberculato, clypeo tenuiter marginato, lateribus obliquis ante late truncato, thorace punctulato et disperse punctato, ante medium subangustato, et lateribus modice rotundato, ad basin late rotundato et subtiliter marginato, angulis posticis obtusis, elytrorum striis crenulatis, interstitiis subplanis, vix obsoletissime punctulatis; mesosterno alutaceo, ad medium striolato. Long. ·21.

One specimen, San Francisco. The terminal fringe of the hind tibiæ is formed of spines equal in length, and the species belongs to the same division (G. of Erichson, Ins. Deutschl. 814,) as *A. congregatus* and *ursinus;* the only representative in the Atlantic States is the introduced *A. foetidus* Fabr. (tenellus *Say.*) The tubercles of the head are very distinct, the anterior one is a small transverse carina, and the three posterior ones are connected by an indistinct elevated line.

A. rubidus, oblongus ferrugineus, nitidus, clypeo antice bicuspi, medio late emarginato, laevi, thorace antrorsum subangustato, lateribus rotundatis, angulis posticio valde rotundatis, disco parcius punctato, punctulis vagis intermixtis, elytris striis profundis crenulatis, interstitiis vage punctulatis. Long. ·28—·32.

San Francisco, not common. Resembles *A. laevigatus*, and belongs to the same division of the genus; the clypeus is more emarginate, and the angles are subacute; the thorax is distinctly narrowed in front and punctured as in *A. oblongus;* the striae of the elytra are more finely crenulate than in either.

A. pardalis, niger oblongus, clypeo testaceo-nebuloso punctulato, antice vix late emarginato, thorace lateribus cum angulis rotundatis, subtilius vage punctato, punctisque maioribus intermixtis, lateribus late testaceis; elytris testaceis nigro variegatis, striis fortiter punctatis, interstitiis paulo convexis, obsolete vage punctulatis, pedibus flavis. Long. ·16.

San Francisco. Resembles *A. serval* Say; the clypeus of the male has three posterior tubercles and a slight anterior transverse elevation.

A. subaeneus, oblongus, aeneo-niger, nitidus, clypeo subtiliter punctato, late emarginato, thorace subtiliter punctato lateribus, antice rotundatis pone medium parallelis, angulis omnibus

rotundatis, elytris striis subtiliter punctulatis, interstitiis planissimis obsolete punctulatis, 2ndo (et 3io, 4toque saepe ad basin) margine basali apicalique tetaceis; pedibus piceis. Long. ·16.

San Francisco. The spines of the apical fringe of the posterior tibiae are somewhat unequal in size. The clypeus is not tuberculate in either sex.

Aegialia Latr.

Ae. crassa, ovata, crassa, convexa, nigra nitida, subtus flavo-setosa, clypeo scabro, thorace punctato, apice laevi, lateribus valde rotundatis vage impressis, elytris striis punctatis, interstitiis parum convexis laevibus. Long. ·17.

San Francisco. The thorax is very short and much narrowed in front, less punctured on the sides than in the middle; the general form is that of Trachyscelis.

Ae. caelata, ovata convexa, nigra nitida, subtus flavo-setosa, clypeo valde scabro, thorace brevi lateribus valde rotundatis, fovea media sulcisque duabus transversis interruptis grosse punctatis (posteriore profunda), elytris inflatis, striis profundis fortiter crenatis interstitiis parum convexis laevibus, subtus pedibusque piceis. Long. ·13.

San Francisco, abundant. The impressions of the thorax are very coarsely punctured, the elevated parts are smooth; the apical coriaceous margin is testaceous, varies with the elytra, and feet rufous.

Sinodendron Fabr.

S. rugosum, piceo-nigrum nitidum, thorace grosse, elytris confluenter foveatim punctatis vix obsolete striatis. Long. ·48—·55.

Mas capite punctato, cornu elongato antice protenso, superne parce ciliato paulo concavo, armato; thorace ad medium antice subito declive, transversim carinato, denteque medio armato; parte anteriore concavo, dense punctato. Tab. I, fig. 15.

Femina capite rugose punctato tuberculo frontali munito, thorace aequaliter grosse punctato, convexo linea dorsali antice abbreviata et elevata, calloque utrinque parum elevato sublaevibus, ad apicem transversim impresso.

Mann. Bull. Mosc., 1843.

California, sent me by Colonel Motschulsky.

Ancylochira Esch.

A. Gibbsii, viridiaenea, elongata, capite purpurascente punctato, fronte carinato, thorace latitudine sesqui breviore, punctato, lateribus subparallelis, basi bisinuata, elytris purpureis, macula magna obliqua antica (puncto humerali aeneo includente), macula transversa postica suturam haud attingente, alteraque ante apicem rufo-flavis, striis profundis punctatis, interstitiis parce punctatis ad apicem emarginatis bidentatis, labro antennisque testaceis, his articulo primo aenescente. Long. ·6. Tab. I, fig. 17.

One specimen, collected at Steilacoom, by Mr. George Gibbs, to whom I dedicate it with much pleasure. The second spot of the elytra is situated about one-third from the apex, and extends from the margin nearly to the suture; the posterior one is near the apex, it also extends nearly to the suture, but is dilated along the margin.

A. Langii, laete viridiaenea, vel cupreo-aenea, capite confertim punctato, thorace latitudine breviore antrorsum sensim angustato, subcanaliculato, versus latera foveato, confertim punctato,

minus dense pone medium; elytris striis profundis punctatis, interstitiis convexis parce punctatis et rugulosis, (macula obliqua parva lobata palide flava), pone medium saepe ornatis; antennis obscure cupreis; elytris ad apicem vel truncatis vel subbidentatis. Long. ·68—·77. Tab. I, fig. 16.

Buprestis Langii Mann. Bull. Soc. Imp. Nat. Mosc., 1843.

Oregon, Dr. Cooper, at Shoalwater Bay; Steilacoom, Mr. Gibbs. Of this species I have seen three specimens; one is bright copper colored; the second is green, with the elytra immaculate; the third is bright green with an oblique yellow lobate spot behind the middle of each elytron; the apex in one is truncate, in the others slightly bidentate.

A. laeviventris, nigro-aenea, subtus nitidior, abdomine vix obsolete punctato, lateribus parce albo-pilosis, segmento ultimo macula utrinque transversa sanguinea notato; thorace latitudine haud breviore, antrorsum angustato, lateribus rectis, angulis omnibus subacutis, disco sat grosse punctato, linea longitudinali plagisque utrinque duabus sublaevibus; elytris minus nitidis, sulcato, striatis, macula trilobata utrinque prope basin ultra medium extensa, alteraque ad dodrantem transversa fulvis ornatis. Long. ·78.

Northern California, Mr. Child. Allied to *A. Nuttalli*, but is narrower; the thorax is longer and the punctures of the abdomen are very indistinct. The anterior spot extends from near the base for two-thirds the length of the elytra, and is composed of three confluent spots, each of which is sub-triangular. Specimens will probably occur in which these spots are not united.

A. adjecta, supra splendide viridiaenea, dense punctata, crassiuscula, thorace latitudine fere triplo breviore, antrorsum angustato, lateribus late rotundatis cuprascentibus, late canaliculato, elytris sutura anguste, margine late cupreis, costis utrinque quatuor scutellarique cum sutura elevata confluente laevibus nitidis, costa altera subsuturali fere integra adjecta, interstitiis dense punctatis, ad apicem subemarginatis. Long. ·6.

Lec. Proc. Acad. Nat. Sc., 7, 17.

One specimen found by Dr. Cooper, on the journey from Fort Vancouver to Yokolt Plain, in July. This species is allied to the two next, as well as to *A. aurulenta* and *striata*, but differs from them all by having obsolete costae between the ordinary ones, and by having an additional costa extending nearly from base to apex between the first dorsal and the suture. The head is glabrous, and uniformly punctured; the under surface is bright coppery, tinged with green, moderately punctured; the prosternum is broadly impressed between the coxae, and is not hairy.

A. lauta, supra splendide viridiaurea, dense punctata, fronte fere glabro non concavo, thorace latitudine plus duplo breviore, antrorsum angustato, lateribus late rotundatis cuprascentibus, late canaliculato, elytris sutura anguste margine late cupreis, costis quatuor alteraque scutellari cum sutura elevata confluente laevibus nitidis, interstitiis dense granulato-punctatis, ad apicem vix truncatis. Long. ·58—·75.

Lec. Proc. Acad. Nat. Sc., 7, 17.

Abundant in Oregon, whence it has been brought in every collection made. Resembles the brilliant variety of *A. striata*, but is distinguished by its more robust form, and by the impunctured costae of the elytra; varieties occur, having a broad blue vitta extending from the first to the third costa. The body beneath is coppery, somewhat hairy, and the prosternum is impressed between the coxae; the front is marked with a very narrow nearly smooth medial line.

A. radians, supra splendide viridiaurea, dense punctata, fronte concavo longe albo-piloso, thorace latitudine vix duplo breviore, antrorsum angustato, lateribus late subrotundatis cuprascentibus, disco late canaliculato, elytris sutura margineque cupreis, costis quatuor scutellarique cum sutura elevata confluente nitidis laevibus, interstitiis dense granulato punctatis, ad apicem subtruncatis. Long. ·6.

Lec. Proc. Acad. Nat. Sc., 7, 17.

One specimen, Fort Vancouver, Dr. Cooper. Perhaps, not distinct from *A. lauta*, but the body is narrower, being of the form of *A. striata;* from the latter it differs by the concave and pilose front; the pectus is as in the preceding, but is densely clothed with long white hair; the under surface is coppery golden, more densely punctured than in *A. lauta*.

BUPRESTIS Linn.

B. angulicollis, aenea, depressa, capite excavato, canaliculato, grosse cicatricoso, thorace latitudine breviore, lateribus postice parallelis, ante medium angulatis, inaequali, versus angulos posticos late excavato, punctato, partibus elevatis costaque dorsali lata elevatis nitidis, elytris sutura, costisque solitis elevatis, secunda late tridilatata, et callo basali instructa, quarta breviore tenui postice late dilatata, partibus elevatis laevigatis nitidis, impressionibus punctatissimis, lateribus haud serratis. Long. 1.13.

Sacramento, Mr. Wittick. Larger than *B. virginica*, in which also the sides of the thorax are sometimes angulated, but never to such an extent as in this species; the dilatations of the second and third elevated lines of the elytra are much wider.

MELANOPHILA Esch.

M. consputa, elongata depressa, atra opaca, capite rugose punctato, thorace tenuiter canaliculato, disco subtiliter transversim rugoso, lateribus punctato et lineis elevatis aciculato, angulis posticis longius carinatis, elytris postice oblique angustatis confertim granulato-punctatis, guttis utrinque quatuor obscure croceis ornatis; subtus aeneo-nigra.—Long. ·47.

Northern California, Mr. Child. This species has nearly the form of our common *M. longipes*, but is a little narrower; the tips of the elytra are separately rounded and not at all acuminate. The spots on each elytron are arranged; one a little before the middle, one-third from the suture; another just behind the middle, one-third from the margin; then, two on a transverse line, one-third from the apex; they, therefore, form, with those of the opposite side, a figure rounded anteriorly, with a straight posterior outline.

ANTHAXIA Esch.

A. expansa, lata depressa, atra, opaca vix aenescens, thorace latitudine duplo breviore, lateribus, valde rotundatis depressis, reticulatim punctato, elytris thorace haud latioribus, confertim granulato-punctatis, fortius marginatis, postice suboblique attenuatis ad apicem rotundatis, ad basin elevato-marginatis.—Long. ·28.

Oregon and California. Resembles a species found in New Mexico, which I consider as *A. aeneogaster* Lap., but is still broader, with the sides of the thorax more rounded, and the posterior angles more obtuse. The base is not truncate as in most Anthaxiae, but is slightly obtuse at the middle; this character, with the sculpture of the thorax and elytra, indicates a passage towards Melanophila.

DICERCA Esch.

D. pectorosa, supra obscure fusco-aenea, capite inaequali grosse punctato, thorace latitudine plus duplo breviore, valde canaliculato, fere bicostato, (costis laevibus), ad latera inaequali, grosse confluenter punctato, lateribus valde rotundato-dilatatis, postice breviter sinuatis, angulis posticis acutis, elytris thorace angustioribus lateribus parallelis, postice prolongatis integris, foveatim striato-punctatis, rugosis, interstitiis dense punctatis, spatiis parvis irregularibus nitidis parum elevatis, praecipue versus scutellum notatis. Long. ·64.

Oregon, Dr. Suckley. Somewhat similar to *D. tenebrosa*, but the thorax is much more dilated, and the smooth spaces of the elytra are not distinct, and are irregularly connected. The terminal segment of the abdomen is truncate, strongly bicostate, with four deep subapical foveae. The under surface is dark brassy, with large rugous punctures of a brighter color.

D. crassicollis, supra obscure cinereo-aenea, capite inaequali grosse punctato thorace latitudine plus duplo breviore, fere quadricostato, costis exterioribus interruptis, utrinque late excavato, lateribus valde dilatatis, postice longius sinuatis, angulis posticis paulo acutis; elytris thorace haud latioribus, humeris rotundatis lateribus subparallelis, postice breviter caudatis et subbidentatis, grosse indistincte striato-punctatis, interstitiis densissime punctatis, alternatim plagis oblongis elevatis laevibus ornatis. Long. ·66.

Steilacoom, Dr Suckley. The elytra are sculptured exactly as in *D. tenebrosa*, but the rows of punctures are less obvious; the posterior prolongation is shorter, and slightly bidentate; the thorax is much more dilated on the sides, and more deeply excavated; in one specimen a small callus is seen in the middle of the dorsal channel. The terminal ventral segment of the male is rounded, but in the female has two acute narrow incisures.

POLYCESTA Esch.

P. californica, nigro-aenea, elongata, capite grosse confluenter cribroso, haud excavato, thorace brevissimo antrorsum angustato, lateribus obtuse angulatis, angulis posticis obtusis haud rotundatis, inaequaliter cribrato, vage tricanaliculato, canalis externis antice abbreviatis, ante scutellum linea brevi longitudinali impresso; elytris margine basali, costisque quatuor elevatis, interstitiis confertim punctatis et biseriatim grosse punctatis lateribus antice late rotundatis, dein parallelis, humeris obtusis. Long. ·75.

Sacramento, Mr. Wittick, one specimen. This species much resembles a larger one found in Texas and a smaller one from Alabama; but from each it is distinguished by the front not being concave and by the more regularly and densely punctured spaces between the costae of the elytra; the series of punctures adjacent to the costae are smaller and more regular; the three inner costae are smooth, while the external one is punctured; the tips of the elytra are broken, some of the small teeth of the lateral serration yet remain.

PEROTHOPS Esch.

P. Wittickí, piceus, undique fusco sericeus, confertissime punctulatus, vertice transversim profunde excavato, thorace latitudine duplo breviore, canaliculato valde convexo, ad basin declivi, antrorsum valde angustato, lateribus valde rotundatis, elytris striatis interstitiis paulo convexis. Long. ·82. Tab. I, fig. 18.

Sacramento, Mr. Wittick. In form this species resembles *P. mucidus*, but the pubescence is brownish gray and more sericeous. The thorax is more convex; and the deep transverse impression between the eyes is very different from the vague rounded one seen in P. mucidus. The discovery of a second species of this curious genus is of great interest, and it gives me pleasure in naming it to commemorate the disinterested services of the gentleman by whom it was collected.

ATHOUS Esch.

A scissus, ater nitidus, tenuissime pubescens, thorace latitudine longiore, confertim punctato, lateribus fere rectis parallelis modice reflexo-marginatis, angulis anticis oblique truncatis; elytris profunde striato punctatis, interstitiis parce punctatis, antennarum articulo 3io triangulari quarto paulo breviore; tarsis haud lobatis. Long. ·58.

One specimen, Oregon, Dr. Cooper. Smaller and a little narrower than *A. reflexus* Lec. (Trans. Am. Phil. Soc. 10, 427,) but nearly allied to it.

LIMONIUS Esch.

L. ornatulus aeneo-niger, griseo-pubescens, clypeo late emarginato vix concavo, thorace confertim punctato, latitudine longiore, antrorsum paulo angustato, lateribus late rotundatis elytris striis bene impressis punctatis, interstitiis punctatis parum convexis, macula utrinque oblonga basali suturaque fulvis, pedibus piceis, tibiis testaceis; antennis nigris, articulis 2 et 3io aequalibus 4to coniunctis haud longioribus. Long. ·2.

San Francisco, Mr. Child, one specimen. This species belongs to the division in which the lateral suture of the prosternum is excavated anteriorly. It may be placed in the vicinity of *L. basillaris*, Lec., (Trans. Am. Phil. Soc. 10, 431,) though the legs are only in part testaceous. The posterior angles of the thorax are rectangular and slightly testaceous.

CORYMBITES Latr. (emend. Lec.)

C. Suckleyi, niger glaber, nitidus longiusculus, thorace latitudine longiore, lateribus late rotundatis, ante medium subangustato, angulis posticis vix divericatis, antice dense, postice in medio obsolete punctato, pone medium canaliculato; elytris thorace haud latioribus, fortius marginatis, subtiliter rugosis striis tenuibus punctatis, interstitiis paulo convexis parce punctulatis, macula elongata marginali ante medium intus curvata, et ad suturam fere extensa, alteraque transversa lunata ad dodrantem ornatis; scutello dilatato griseo-piloso; antennis articulo 3io haud dilatato, 4to sequente vix maiore. Long. ·53.

Steilacoom, George Gibbs, esq., one specimen. It affords me much pleasure to dedicate this beautiful species to Dr. Suckley, my esteemed friend, who, by his active and scientific zeal, has added so many new objects to the fauna of the regions explored by him.

Although resembling in many characters, as well as by its form, *C. aratus*, Lec., (Trans. Am. Phil. Soc. 10, 438,) this species seems, from its dilated scutel and glabrous body, to indicate a new section of the genus, to be placed between the first and second established by me.

C. festivus, crassiusculus, vix tenuiter pubescens, niger, thorace quadrato, modice convexo, lateribus antice rotundatis, angulis posticis paulo divaricatis, confertim punctato sanguineo, vitta lata dorsali, margine laterali prosternoque nigris; elytris testaceis, sutura (antice latiore,)

macula elongata a humero fere ad medium extensa, fasciaque postice concava pone medium nigris, strigaque postica submarginali fusca ornatis striis profunde punctatis, interstitiis parce punctulatis; abdominis lateribus sanguineis, pedibus ferrugineis, antennis fuscis, articulis tribus baseos ferrugineis. Long. ·53.

One specimen, Steilacoom, George Gibbs, esq. Nearly related to *E. cruciatus* of Europe and to *C. pulcher* Lec., (Trans. Am. Phil. Soc. 10, 440,) but sufficiently distinct by the foregoing characters. The red margin of the abdomen is gradually widened behind, so that the last joint is red with a large basal black spot; each segment is also margined with red; the anterior lobe of the prosternum is partly red, and the black extends beyond the prosternum upon the pleuræ, which are thus red with black margins, as in *C. pulcher*.

AGRIOTES Esch. (emend. Lec.)

A. macer, valde elongatus, ater opacus pubescens, thorace latitudine sesqui longiore, lateribus parallelis, antice paulo rotundatis, confertim punctato, transversim minus convexo, elytris striis punctatis, interstitiis sat dense punctatis, antennis articulis 2ndo et 3io coniunctis 4to aequalibus. Long. ·32.

Shoalwater Bay, Dr. Cooper. Very closely resembles *A. oblongicollis*, (Dolopius oblongicollis *Mels.*,) but the thorax is less convex transversely, and the feet are black.

ELATER Linn. (emend. Esch.)

E. rhodopus, ater breviter griseo-pubescens, thorace confertim punctato, postice subcanaliculato, elytris striis vix impressis punctatis, interstitiis confertim rugose punctulatis, pedibus antennisque ferrugineis, his articulo 3io secundo fere duplo longiore. Long. ·45.

Steilacoom, George Gibbs, esq., one specimen. Of the same form as *E. luctuosus*, Lec., (Trans. Am. Phil. Soc. 10, 466,) but differs from that, as from all the species there described, by the less deep elytral striæ, which, towards the tips, are represented only by rows of punctures.

E. caprella, elongatus, ater cinereo-pubescens, thorace latitudine longiore, antrorsum angustato, lateribus antice rotundatis, sat dense punctato vix canaliculato; elytris macula basali, altera angulata ante medium, tertiaque rotundata ad dodrantem flavis, striis punctatis, interstitiis planis rugose punctatis, antennis articulis 2ndo et 3io aequalibus, pedibus testaceis. Long. ·25.

Shoalwater Bay, Dr. Cooper. Very similar to *E. stigmosus* Lec., (Trans. Am. Phil. Soc. 10, 472,) but the striæ of the elytra are not so deep, and the basal spot is not connected with the angulated spot, which rises along the suture nearly to the scutel; the posterior spot is larger and more rounded; the thorax is more distinctly narrowed anteriorly. Varieties were found in which the basal and angulated spots are obsolete, or even entirely wanting.

ADELOCERA Latr.

A. aurorata. A specimen found at Steilacoom by Mr. Gibbs agrees in every respect with the description made by me from the typical specimen found in New Hampshire by Dr. Harris; as I have not a specimen in my collection, I cannot assure myself of their identity by a direct comparison.

ELLYCHNIA Lec.

E. facula, elongato-elliptica, atra tenuiter pubescens, thorace latitudine vix breviore disco convexiusculo, lateribus et apice concavis reflexis punctatis, macula submarginali lunata rosea ornato, elytris dense punctulatis, linea unica dorsali obsoleta utrinque notata. Long. ·52.

Prairie Paso, Dr. Cooper, one specimen. Differs from *E. corrusca* by its less dilated form and longer thorax, and by the elytra having only one obsolete line.

TELEPHORUS Geoffr.

T. larvalis, flavo-testaceus, subtilissime pubescens, thorace glabro nitido, latitudine longiore, lateribus parallelis, angulis posticis haud rotundatis, disco antice ad latera excavato, medio late canaliculato, pone medium sub-binodoso, elytris substriatis scabris, antennis ad apicem fuscis, articulis 2ndo et 3io aequalibus. Long. ·31.

Shoalwater Bay, Dr. Cooper, one specimen. Resembles *T. longulus* Lec. (Proc. Acad. Nat. Sc. 5, 343,) but the thorax is not narrowed, the excavations are larger and deeper, and the second joint of the antennae is not shorter than the third.

ENOPLIUM Fabr.

E. dichroum, elongatum laete rubrum, pube erecta nigra vestitum, thorace latitudine longiore, convexo, lateribus antice parallelis, postice angulatis, angulis anticis rotundatis, posticis obtusis, parce punctato, obsolete transversim biimpresso, medio breviter canaliculato, ad basin fortiter marginato; elytris thorace parum latioribus, cyaneo-nigris, opacis valde punctatis, ore antennis pedibusque nigris. Long. ·4.

Sacramento, Mr. Wittick, one specimen. This species belongs to the division named Pelonium, by Spinola, and although, by the colors of the upper surface, it immediately recalls *E. damicorne*, on comparison they are found to possess hardly a single character in common.

PTINUS Linn.

P. interruptus, niger vel fuscus, thorace postice valde constricto, antice obsoletius tuberculato, longe albo-setoso, elytris (maris) elongatis parallelis, striis punctatis, ad apicem laevigatis, seriatim cinereo-pilosis, antice, versum apicem et prope suturam albo-pubescentibus; subtus aequaliter cinereo-pubescens, pedibus saepe ferrugineis. Long. ·10.

San Francisco, on flowers, May. Resembles very closely *P. quadrimaculatus* Mels., but the thorax is very slightly tuberculate, and hardly constricted at the apex.

SINOXYLON Duftschmidt.

S. declive, nigro-piceum, capite punctulato, thorace globoso antice tuberculato et exasperato, postice parce punctato, lateribus postice laevigatis saepe ferrugineis, elytris glabris confertim subrugose punctatis, ad apicem oblique declivibus vix tuberculatis, et versus suturam late sulcatis impunctatis, denticulo subsuturali parvo superne armato; pedibus antennisque rufis. Long. ·22—·25.

Sacramento, Mr. Wittick. Differs from several species in my collection by the elytra having merely one very small acute tooth near the suture, at the upper part of the oblique posterior declivity.

EXOPS Curtis.

E. ovicollis, piceo-ater pubescens, capite thoraceque opacis, dense granulato-punctatis, pilis nigris erectis vestitis, hoc ovato, postice angustato, convexo, subcanaliculato, antice transversim vage impresso, elytris confertim punctulatis. Long. ·73. Tab. I, fig. 19.

San Francisco; given me by Mr. J. P. Wild. This species differs from *E. Stoutii Lec.* by the thorax being more convex, opaque, and as strongly granulate in the middle as at the sides, while in E. Stoutii the middle of the disc is shining and not very densely punctured.

Upon E. Stoutii I formerly constructed a Genus Alloeocnemis, which I considered allied to Nemosoma, but, on finding it to be identical with Exops, made the necessary correction; but in doing this I was misled by Erichson's opinion, in Agassiz Nomenclator Zoologicus, that Exops is synonymous with the previously described Polycaon *Laporte;* the latter, as I am assured by Prof. Lacordaire, is an entirely different genus, which really belongs, as stated by Erichson, to the Melyridae.

NYCTOPORIS Esch.

N. galeata, atra, opaca, capite cristato, varioloso, thorace confluenter varioloso, quadrifoveato, foveis internis profundioribus, lateribus antice valde rotundatis, elytris cristis interruptis aequaliter elevatis. Long. ·5—·6. Tab. II, fig. 1.

Very abundant at San Francisco, under bark of oak trees. Resembles *N. cristata* Esch., but, on comparison with a specimen of the latter, sent me by Col. Motschulsky, I find the following differences: The thorax is wider than long, and considerably rounded on the sides before the middle, while in N. cristata the length is equal to the breadth, and the sides are only moderately rounded. The tubercles, into which the crests of the elytra are broken, are much closer, and the crests are less elevated; the intervals are each marked with a row of elevated punctures.

NOSODERMA Sol.

N. diabolicum, nigrum opacum cataphractum, thorace latitudine longiore, latius canaliculato, disco utrinque impresso, partibus elevatis granulis nitidis parce notatis, margine crenulato, elytris, inaequalibus ante apicem subretusis, macula humerali alteraque apicali sordide cinereis. Long. ·6—·8. Tab. II, fig. 2.

Lec. Ann. Lyc. Nat. Hist. of New York, 5, 130.

San José, Sacramento, and San Diego, under oak bark.

ELEODES Esch.

E. connexa, elongata, nigra, nitida, thorace latitudine breviore, postice angustato, modice convexo, parce punctulato, lateribus rotundatis, angulis anticis acutis prominulis, posticis obtusis, ad basin late rotundato, elytris thorace sesqui latioribus, elongatis ovalibus, postice declivibus subacutis, striis muricato punctatis, interstitiis subconvexis rugosis (præcipue versus latera) et parce muricato-punctatis; femoribus anticis dente acuto armatis. Long. ·9; lat. elytr. ·32, thor. ·23.

Prairie Paso; Dr. Cooper. Forms one of a series of species connecting *E. sulcata* and *E. obscura;* distinguished from the former by the more convex, more rugose, and less deeply striate elytra, and from the latter by the smaller thorax, with prominent anterior angles.

E. sulcipennis. I formerly considered this as a geographical variety of *E. obscura*, but it differs in having a larger and less convex thorax. I am not yet sufficiently advanced in the study of this very difficult genus to determine whether it should be placed as a species or as a race.

E. granulata, elongato-ovata, nigra parum nitida, capite thoraceque subaequa liter punctatis, hoc subquadrato, minus convexo, latitudine paulo breviore, lateribus rotundatis, ad basin vix sinuatim rotundato, angulis posticis obtusis rotundatis, elytris thorace latioribus, ovalibus apice valde declivibus subacutis, dorso minus convexis seriatim granulatis et parce muricato-punctatis, versus suturam subseriatim punctatis; humeris subproductis; prosterno postice producto; femoribus muticis. Long. ·58.

Oregon; Col. McCall. This and the next species are somewhat similar in form to *E. quadricollis*, but are less convex. The sculpture of the elytra is peculiar, being formed of small, somewhat shining, flat tubercles, arranged in series, with intervening scattered acute elevated punctures.

E. humeralis, longior ovata, atra opaca, capite thoraceque densius punctatis, hoc parum convexo, latitudine paulo breviore, subquadrato, postice angustiore, lateribus rotundatis, ad basin fere truncato, angulis posticis obtusis, elytris ovalibus, thorace latioribus, obsolete striatis dorso depressis ad apicem subacutis valde declivibus, granulis subacutis parvis minus confertim inordinatim positis, versus suturam punctatis; prosterno postice perpendiculari, femoribus muticis; tibiis anticis calcari interno duplo longiore. Long. ·57—·65.

Wenass river to Fort Colville; Dr. Cooper. Readily distinguished by the foregoing characters. By the larger size of the spur of the anterior tibiæ, it tends towards *E. tricostata*, and several nondescript species.

E. cordata. Specimens of three forms, allied to this species, were obtained in Oregon, and, although evidently differing from those collected by me in California, I am not able to decide regarding the propriety of separating them. They may be known by the thorax being more broadly dilated, and more regularly rounded on the sides, although equally densely and coarsely punctured; the posterior sinuation is therefore much shorter, although the basal angles remain rectangular. The other distinctions are as follows:

1. *E. rotundipennis.* Thorax very much constricted behind, fully one-half wider than lo ; elytra as coarsely, but less densely punctured. Length, ·45—·55.

2. *E. stricta.* Thorax less suddenly, but very much constricted at base, fully one- alf wider than long; elytra more coarsely and less densely punctured. Long. ·62.

3. *E subligata.* Thorax only moderately constricted at base, scarcely wider than long; elytra punctured as in E. cordata. Length, ·44.

Helops Fabr.

H. lætus, supra piceo-aeneus pernitidus, capite thoraceque confertim punctatis, hoc lateribus fortius marginatis, margine rufo-piceo, angulis anticis valde rotundatis, posticis subrectis subrotundatis; elytris striis profundis, interstitiis parce punctulatis, ante medium lateribus paulo concavis; subtus rofo-piceus. Long. ·33.

One specimen, Steilacoom, Mr. Gibbs. Somewhat allied to *H venustus* Say, but smaller and broader, with the sides of the thorax broadly margined, and the spaces between the striæ of the elytra less convex.

CONONOTUS Lec.

C. sericans, testaceus, subtiliter confertissime punctulatus, griseo pubescens, thorace latitudine apicali sesqui longiore, postice regulariter valde angustato, utrinque truncato, elytris elongato ellipticis, parum convexis. Long. ·13. Tab. II, Fig. 3.

Lec. Ann. Lyc. Nat. Hist. of New York, 5, 137.

San José, and San Diego, California, under stones. This genus is allied to Apocrypha, but the form is very different.

NYCTIBATES Esch.

N. serrata, atra opaca, capite thoraceque confluenter punctatis, hoc transverso, cordato, lateribus valde rotundatis pone medium subserratis, postice angustato, angulis posticis acutis prominulis ; elytris thorace latioribus fortius punctato-striatis, dense punctatis ; tibiis rectis, antennis breviusculis. Long. ·9. Tab. II, Fig. 5.

Mann. Bull. Soc. Imp. Nat. Moscou, 1843.

Oregon. Nearly allied to a nondescript found in the northern Atlantic States, but differs by the less coarse punctures of the head and thorax, as well as by the latter being much narrowed towards the base. The punctures of the striæ of the elytra are finer and more closely placed. This genus may be distinguished from its allies by the mentum being transverse, broader anteriorly, and obtusely rounded, flat or slightly concave.

PLATYDEMA Laporte.

P. oregonense, ovale convexum, nigrum nitidum, capite subtiliter punctato, ore clypeoque rufo-piceis, thorace brevi antrorsum angustato, lateribus marginatis vix rotundatis, basi bisinuato, angulis posticis rectis, subtiliter punctato ; elytris striis punctulatis, interstitiis paulo convexis disperse subtiliter punctulatis, epipleuris piceis ; pedibus antennisque ferrugineis, his articulo ultimo pallidiore. Long. ·22.

Fort Vancouver, Colonel McCall. The elytra are slightly dilated from the base nearly to the middle, then gradually narrowed and rounded.

PHALERIA Latr.

P. globosa, rotundata convexa, testacea, capite thoraceque confertim punctatis, hoc antrorsum angustato, lateribus valde rotundatis, ad basin utrinque striola brevissima notato ; elytris profunde striatis, interstitiis confertim rugosis et punctatis, guttis parvis ad basin versus scutellum, maculis duabus ante medium linea angulata connexis, alteraque ad dodrantem nigris ; postpectore abdomineque obscuris ; antennis ultra thoracis basin extensis. Long. ·12. Tab. II, Fig. 4.

San Francisco, given me by Mr. J. P. Wild. Seems to resemble *P. picta*, but the thorax of that species is said to have two basal striæ each side, and only one elytral black spot.

LYTTA Linn.

L Cooperi, atra capite thoraceque læte fulvis nitidis lævigatis, illo basi subemarginato, ante oculos nigro, hoc pentagonali, latitudine breviore, angulis lateralibus acutis, dorso deplanato ;

elytris lineis elevatis grosse reticulatis ; antennis extrorsum incrassatis, articulis rotundatis, tibiis posticis calcari externo longiore dilatato. Long. ·78. Tab. II, Fig. 6.

Lec. Proc. Acad. Nat. Sc. 7, 18.

Wenass River to Fort Colville. I have, with great satisfaction, dedicated this beautiful species to Dr. Cooper, by whom it was collected, and to whose industry we are indebted for many important collections in Oregon. It belongs to the group (A—b) of my synopsis of Meloidae (Proc. Acad. 6, 334) near *L. vulnerata.*

L. Childii, atra opaca, capite thoraceque parce punctatis, illo gutta verticali conspicus flavo, hoc latitudine longiore, lateribus antice rotundatis, elytris thorace sesqui latioribus scabris ; antennis extrorsum crassioribus articulis rotundatis, ultimo plus duplo longiore acuminato ; tibiis posticis calcari externo crasso cylindrico. Long. ·6—·68.

San Francisco, collected by Mr. J. Child, to whom I dedicate it as a slight memorial of the many valuable species made known by his scientific zeal.

Nearly of the same form as *L. nitidicollis* Lec., but, from its uniform black color, resembling *L. moerens* Lec. From the latter it differs by the thick cylindrical outer spur of the posterior tibiae ; the last joint of the antennae is longer than in either.

Ditylus Fischer.

D. quadricollis, ater subtiliter nigro-pubescens, confertim subtiliter punctulatus, thorace latitudine fere breviore subquadrato, postice subangustato, ad basin marginato truncato, ad apicem late rotundato, lateribus antice rotundatis, postice subobliquis ; elytris thorace fere duplo latioribus lineis quatuor obsoletis elevatis. Long. ·65.

Lec. Ann. Lyc. Nat. Hist. of New York, 5, 157.

Steilacoom, Dr. Suckley and Mr. Gibbs. The description first published by me was taken from a specimen in which, by injury, the thorax had been flattened so as to become square with parallel sides ; but in the others since obtained the sides converge slightly behind, but not nearly so much so as in *D. coeruleus.*

D. vestitus, ater subaenescens, pube fusca subsericea dense vestitus, capite thoraceque confertim subtiliter punctatis, illo linea verticali sublaevi, hoc latitudine longiore postice subangustato, ad basin marginato truncato, ad apicem late rotundato, lateribus ante medium rotundatis postice subsinuatis ; elytris thorace sesqui latioribus dense scabro-punctatis, lineis elevatis quatuor obsoletis. Long. ·59. Tab. II, fig. 7.

Shoalwater Bay, Dr. Cooper ; one specimen. Remarkable by the dense brown pubescence with which it is covered ; the body is slender, as in *D. gracilis,* but the thorax has no discoidal impressions.

Bruchus Linn.

B. pauperculus, oblongus, ater, undique cinereo-pubescens, thorace antrorsum angustato, confertim punctato, elytris profunde striatis interstitiis planis. Long. ·045—·06.

San José and San Diego, California. By the small size, entirely black color, and uniform pubescence, this is easily distinguished from all others known to me.

Rhynchites Herbst.

R. glastinus, elongatus niger, supra nigro-cyaneus, griseo-pilosellus, capite parce punctato, inter oculos sulcato, sulco antice furcato et ad rostri apicem fere extenso, occipite transversim

rugoso, thorace latitudine vix longiore punctato; elytris fortiter seriatim cribratis, interstitiis uniseriatim punctatis; rostro valido brevi ad apicem latiore. Long. ·15.

San Francisco, May. The rostrum is hardly longer than the head, and besides the two diverging grooves which unite between the eyes, there is a slight fovea between the antennae. Belong to Schönherr's Stirps 2, Manipulus 2.

APION Herbst.

A. crassinasum, nigrum minus subtiliter cinereo-pubescens, capite subtilius punctato, inter oculos profunde sulcato, rostro thorace vix longiore, crassiusculo ad basin paulo dilatato, punctulato ad apicem laevi, thorace confertim cribrato latitudine non longiore, lateribus paulo rotundatis, ad apicem subtubulato, ad basin medio profunde foveato; elytris subovatis longiusculis subaenescentibus, convexis, striis valde crenatis, interstitiis subrugosis, uniseriatim punctulatis, ad basin subtruncatis humeris rotundatis; antennis versus rostri basin insertis. Long. ·08.

One specimen, San Francisco; another found by Dr. Cooper at Prairie Paso. Belongs to Schönherr's Stirps 1, near *A. Sayi*, but is much smaller and more elongate, being nearly the shape of *A. proclive*.

A. proclive, nigro-subaeneum fere opacum, parce cinereo-pubescens, capite punctato, inter oculos sulcato, rostro corporis dimidio haud breviore, tenui cylindrico paulo arcuato, utrinque ad latera postice unistriato; thorace latitudine haud longiore antrorsum angustato, lateribus parum rotundatis, ad apicem transversim paulo constricto, grosse punctato, basi medio foveato; elytris convexis ovatis, humeris obtuse rotundatis, thorace duplo latioribus, striis crenatis, interstitiis subplanis subtilissime rugosis; antennis versus rostri basin insertis. Long. 08..

San Francisco, June, not rare. The foregoing characters will enable it very readily to be recognized. It may be, perhaps, *A. cuprescens* Mann., but the description of the latter is not very definite, and its locality is Sitkha.

A. cribricolle, nigrum (capite fracto,) rostro crassiusculo subarcuato, thorace paulo longiore, subtiliter rugose punctulato; thorace latitudine haud breviore confertim cribrato-punctato, ad apicem angustato et subconstricto, lateribus subparallelis, pone medium canaliculato; elytris virescentibus fere nitidis, striis crenatis, interstitiis planis subrugosis, subtilissime uniseriatim pubescentibus, convexis longius ovatis, ad basin subtruncatis, humeris obtuse rotundatis; antennis ad rostri medium insertis. Long. ·07.

San Francisco, one specimen.

A. cavifrons, nigrum parce subtiliter cinereo-pubescens, capite punctato, inter oculos tenuiter carinato utrinque longe excavato, rostro thorace paulo longiore, crassiusculo cylindrico, versus basin opaco; thorace latitudine haud breviore, antrorsum angustato, lateribus paulo rotundatis, confertim cribrato-punctato linea dorsali profunde antice paulo abbreviata; elytris ovatis longiusculis convexis fere nitidis subvirescentibus, striis fortiter crenatis, interstitiis vix rugulosis, uniseriatim punctulatis, ad basin subtruncatis humeris obtuse rotundatis; antennis versus rostri medium insertis, articulis baseos duabus rufis. Long. ·08.

Prairie Paso, Dr. Cooper. Only one specimen was obtained of this very interesting species; the thorax is not at all constricted at the apex.

A. protensum, valde elongatum, nigrum, capite punctato inter oculos subfoveato, ante oculos

transversim impresso, rostro thorace longiore, tenui punctulato ad apicem lævi, pone medium paulo dilatato; thorace latitudine sesqui longiore, ad medium paulo rotundato, ad apicem subtubulato, grosse punctato, postice canaliculato, elytris elongatis subovalibus, convexis, striis crenatis interstitiis rugosis biseriatim subtilissime punctulatis; antennis pone rostri medium insertis. Long. ·08.

San Francisco. The elytra are twice as wide as the thorax, and are almost regularly oval; more than twice as long as their greatest width.

Sitones Germ.

S. vittatus, elongatus niger, dense cinereo squamosus, fronte sulcato, rostro extrorsum late concavo, thorace latitudine longiore, fusco bivittato, subcanaliculato punctato, elytris striatis interstitiis 2; 4, 6 et 8vo fuscis, reliquis cinereis uniseriatim setulosis; oculis parum prominulis. Long. ·17.

San Francisco and San Diego. Of the size, shape, and sculpture of *S. seniculus*, but differs by the regular vittæ of the elytra, and by the entirely black antennæ; the rostrum is concave only beyond the extremity of the frontal groove.

S. sordidus, longiusculus niger, dense sordide squamosus, fronte sulcato, rostro ad apicem concavo, thorace latitudine haud longiore, punctato vix vittato; elytris striatis interstitiis alternis uniseriatim setulosis; antennis ad basin ferrugineis; oculis parum prominulis. Long. ·2.

With the preceding. Larger and less slender than *S. seniculus*, and distinguished by the rostrum being slightly narrowed at base, and flat above as far as the end of the frontal groove, and then concave to the apex. In S. seniculus the rostrum is concave for nearly its entire length, and is not at all narrowed at the base. The color of the scales is cinereous in S. seniculus, and dirty yellowish brown in the present species.

Alophus Schönh.

A. didymus, niger, ochreo fusco subtiliter dense pubescens, rostro canaliculato, thorace dense punctato, latitudine vix breviore, antice profunde constricto, lateribus antice paulo rotundatis tenuiter canaliculato, vitta utrinque sublaterali pallidiore; elytris thorace sesqui latioribus, dense subtiliter rugose punctulatis, ochreo nigroque subtesselatis, gutta utrinque ante medium alteraque ad dodrantem densius pallide pubescentibus. Long. ·48.

Lec. Proc. Acad. Nat. Sciences 7, 20.

Oregon, Dr. Townsend. Smaller and narrower than *A. alternatus* Say, and readily distinguished by the different form of the thorax, and by the absence of elytral striæ.

A. constrictus. On comparing a specimen from Sitkha, sent me by Baron Chaudoir, and one collected by Dr. Cooper on the journey from Vancouver to Yokolt, with *A. alternatus* Say, found at Lake Superior, I find them entirely different. The species from Oregon and Russian America has the sides of the thorax subserrate and the apex strongly constricted; the body is, also, more elongate, and the thorax is much smaller. *A. didymus* approaches it more nearly; the thorax of that species is not at all narrowed towards the base, and the sides are not serrate.

LISTRODERES Schönh.

L. teretrirostris, niger oblongus, cinereo-sordide squamosus, capite rostroque confertim punctatis, illo thorace paulo breviore paulo arcuato, cylindrico, dense argenteo squamoso haud carinato, fronte sufoveato, thorace latitudine longiore, lateribus rotundatis, confertissime punctato, parce nigro-punctato et pilosello ; elytris thorace latioribus, latitudine fere duplo longioribus ad basin late emarginatis, humeris rotundatis, nigro-variegatis striis punctatis interstitiis parce uniseriatim nigro-punctatis et setulosis ; antennis piceis, articulo 3io secundo plus sesqui longiore. Long. ·24.

One specimen, San Francisco. Two other specimens were found, of a much smaller size, (·15—·18,) but I can find no character upon which to separate them, except that the scales upon the thorax appear more flat, so that no scabrous appearance results.

L. oregonensis, niger oblongus, sordide squamosus, rostro thorace vix breviore, confertim punctato et rugoso, subtiliter carinato, capite confertim punctato, thorace grosse confertissime punctato, latitudine vix breviore, lateribus rotundatis, antrorsum angustato ad apicem transversim paulo impresso, elytris thorace latioribus ad basin truncatis, latitudine sesqui longioribus, humeris paulo rotundatis, striis punctatis, interstitiis confertim punctulatis ; antennis nigris, articulo 3io secundo fere duplo longiore. Long. ·27 ; lat. elytrorum ·11.

One specimen, Shoalwater Bay, Dr. Cooper. The scales are nearly all removed by the spirits in which it was preserved.

HYLOBIUS Germ.

H.? taeniatus, elongatus, ater opacus, tenuiter flavo-pubescens, rostro 5-sulcato, ad apicem latiore, thorace inaequali grosse valde punctato, latitudine vix longiore, lateribus late rotundatis, irregulariter late canaliculato, et antrorsum vage impresso ; elytris thorace sesqui latioribus, ad basin subtruncatis, punctis magnis quadratis striatim positis, interstitiis granulato-punctatis, quinto macula ad quadrantem, alteraque ad dodrantem flavo-pilosis, macula subhumerali scutelloque flavo-pilosis ; antennis elongatis, femoribus, muticis. Long. ·53.

One specimen, Vancouver, Colonel McCall. The middle groove of the rostrum commences in a fovea between the eyes, and extends to the apex ; the lateral grooves are in front of the eyes, they are broad behind, and gradually narrowed anteriorly, vanishing a little beyond the middle ; the intermediate grooves are vague and anterior. The antennal grooves extend to the inferior part of the eyes, and are deep ; the two basal joints of the funiculus are elongate, the second is one-half longer than the first, and twice as long as the third. This species cannot be a Hylobius, but I do not know where to place it ; and while the family of Curculionidae is in such inextricable confusion as has been produced by the generic descriptions of Schönherr, it is absurd to establish any other genera, except upon the most remarkable characters. The characters, however, seem to be nearly those of Geonemus.

H. torpidus, ater, capite cum rostro confertim punctato, hoc subtiliter carinato, ad apicem incrassato, thorace profunde canaliculato, latitudine haud longiore subrotundato, rude rugose punctato, interstitiis punctatis, elytris connatis ovalibus, postice perpendiculariter declivibus, thorace haud sesqui latioribus, dense nigro-squamosis, breviter setulosis, punctis magnis operculatis striatis, postice versus latera squamulis luteis variegatis ; femoribus muticis, tibiis anticis curvatis intus serratis. Long. ·3—·32.

Oregon, Dr. Townsend and Mr. Gibbs. The specimen collected by Dr. Townsend was given to me by Mr. Willcox, as Barynotus torpidus of the Berlin Museum; but the species belongs as little to Barynotus as to Hylobius. The prothorax is lobed behind the eyes; the rostrum is longer than the head, with the antennal groove very short and slightly flexed. The antennae are slender, with the first and second joints of the funiculus elongate, the others rounded, short and equal.

PTOCHUS Schönherr.

P. saccatus, ater cinereo-pubescens, capite cum rostro confertissime punctato, canaliculato, hoc ad basin impresso, ultra medium concavo, thorace latitudine plus duplo breviore, lateribus parum rotundatis, confertim sat grosse punctato; elytris globosis, punctis quadratis striatis, interstitiis punctulatis. Long. ·2.

Oregon, Dr. Cooper. The scales and most of the pubescence have been removed.

P. globiventris, ater, supra parce viridi-argenteo squamosus, capite thoraceque cinereo-pubescentibus, illo cum rostro profunde punctato, fronte fovea oblonga impresso, rostro plano; thorace latitudine breviore, lateribus rotundatis, grosse sat dense punctato, elytris globosis punctato-striatis, interstitiis obsolete punctulatis. Long. ·2.

San Francisco, one specimen. The antennal grooves are very short, and on the upper surface of the rostrum, which at tip is hardly emarginate. The body beneath is thinly clothed with cinereous hair, and greenish white scales. The antennal club is longer than in the preceding species.

OTIORHYNCHUS Germ.

O. segnis, elongatus niger, squamulis cinereis fuscisque vestitus, capite rostroque confertim punctatis, hoc capite paulo longiore, vage longitudinaliter impresso, ad basin transversim impresso, thorace latitudine vix longiore, ovali lateribus rotundato, densissime punctato, vix obsolete canaliculato, elytris elongato-ovalibus, postice valde declivibus, thorace parum latioribus, punctis rotundatis operculatis striatis; tibiis anticis valde curvatis, intus parce serratis. Long. ·4.

Sacramento, Mr. Wittick; Prairie Paso, Dr. Cooper.

O.? naso, alatus niger (cinereo? squamosus), capite rostroque confertim punctatis, hoc carinato, capite duplo longiore ad apicem valde dilatato; thorace latitudine haud breviore, antrorsum angustato, lateribus paulo rotundatis, confertissime punctato, elytris ad basin thorace sesque latioribus, humeris obtusis distinctis, punctato-striatis, interstitiis punctulatis; tibiis anticis curvatis, intus subserratis. Long. ·36.

Oregon, Col. McCall. Certainly not Otiorhynchus. The thorax is not lobed behind the eyes; the ungues are distant and free, and the antennae are as in Otiorhynchus. The form of body is somewhat as in Phyllobius or Brachystylus, and still more as in Platyomus; the antennal grooves are slightly deflexed, but become obsolete posteriorly; the divergence of the apical lobes of the rostrum is as great as in Otiorhynchus.

TYLODERES Schönherr.

T. gemmatus, ater, breviter parce setulosus, dense sordide cinereo-squamosus, rostro carinato, capite plus duplo longiore, ad apicem latiore; thorace latitudine sublongiore, lateribus rotundatis, antrorsum paulo angustiore, tuberculis nitidis obsito, profunde canaliculato, canali lateri-

busque pallidioribus; elytris connatis ovalibus, postice perpendiculariter declivibus, sutura costisque tribus densius, interstitiis parce tuberculatis. Long. ·37—·45.

Shoalwater Bay, Dr. Cooper. Seems to agree more nearly with Tyloderes than with any other genus, but the thorax is very slightly lobed behind the eyes.

EMPHYASTES Mann.

E. fucicola, nigro-piceus, testaceo limbatus, vel totus testaceus, glaber, oblongus; rostro sulcis utrinque duabus postice convergentibus, sulcoque antico notato, thorace rotundato subtransverso parce punctato; elytris ovalibus convexis postice subacutis striatis interstitiis convexis, rugose punctulatis punctisque magnis sparsis impressis, pedibus testaceis genubus tibiarum apice tarsique infuscatis. Long. ·3. Tab. II, fig. 8.

Mann. Bull. Mosc. 1852.

Sitkha and San Francisco, near the sea shore under sea weed. This genus is very remarkable by the tibiae being thick, and much dilated at the apex. A smaller species was found by me at San Diego.

LIXUS Fabr.

L. auctus, elongatus ater, dense cinereo-pubescens, flavo-pollinosus, fronte puncto impresso; thorace punctis nigris nitidis paucis notato, latitudine baseos haud breviore, antrorsum angustato, lateribus fere rectis, dorso late minus profunde sulcato; elytris punctis grossis striatis, ad apicem singulatim longe acuminatis; femoribus muticis. Long. ·5.

Oregon, Dr. J. K. Townsend. One specimen given to me by Mr. Willcox under the above name.

MAGDALINUS Germ.

M. imbellis, piceo-ferrugineus, rostro sat dense, capite confertim punctato, inter oculos breviter canaliculato, thorace latitudine haud longiore, antrorsum angustato, lateribus rotundatis, angulis posticis acutis prominulis, confertissime punctato, subcarinato; elytris parallelis apice rotundatis, dense rugosis parce squamulosis, fortiter punctato striatis; postpectore abdomineque nigris; femoribus subtus unidentatis. Long. ·24.

One specimen found by Dr. Cooper on the journey from Vancouver to Yokolt.

M. gracilis, magis elongatus niger opacus, capite rostroque confertim punctatis, thorace quadrato, lateribus parallelis antice subserratis, ad apicem subito angustato, et subtubulato, confluenter punctato, linea antica vix laevi notato; elytris thorace parum latioribus, elytris striis crenatis, interstitiis connexis rugosis uniseriatim albo-setulosis; femoribus unidentatis. Long. ·16.

San Francisco, not rare. Sufficiently distinct by the above characters from any found in the Atlantic States.

BALANINUS Germ.

B. uniformis, piceus, undique densissime fulvo-pubescens, concolor, rostro ferrugineo, corpore paulo breviore, arcuato laevigato, thorace latitudine breviore, antrorsum valde angustato, lateribus paulo rotundato ad apicem subtubulato, elytris latitudine haud sesqui longioribus, a humeris postice sensim angustatis, striato punctatis; femoribus subtus acute dentatis. Long. ·28.

Sacramento, Mr. Wittick; Steilacoom, Dr. Suckley. Resembles much a species which I con-

sider as *B. nasicus* Schönh., but the rostrum has only a very few punctures near the base, the thorax is more generally rounded in front, and the elytra are more regularly narrowed from the base and less rounded on the sides; the color of the pubescence is almost entirely uniform.

BARIDIUS Schönherr.

B. macer, niger nitidus, elongatus, capite rostroque confertim punctatis hoc ad basin transversim impresso arcuato, thorace paulo breviore; thorace latitudine haud longiore, a basi sensim, ad apicem subito rotundatim angustato, sat dense grossius punctato, linea dorsali vix conspicuo; elytris vix impressis, striis profundis leviter punctatis, interstitiis uniseriatim punctulatis, pygidio grosse confluenter punctato. Long. ·13—·15.

San Francisco; belongs to Schönherr's Stirps 1.

B seriatus, elongatus, niger subnitidus, capite parce punctulato, opaco, rostro rugose punctato, arcuato, thorace vix breviore, ad basin transversim impresso; thorace grosse punctato; latitudine vix longiore, lateribus subparallelis ante medium valde rotundatis; elytris striis impunctatis profundis, interstitiis uniseriatim fortius punctulatis. Long. ·09.

One specimen found at San Francisco; belongs to the same division as the preceding.

ANALCIS Schönherr.

A. morbillosus, elongatus ovalis,niger, thorace latitudine paulo longiore, lateribus pone medium, subparallelis ante medium rotundatis, disperse at profunde foveatim punctato, spatio dorsali sublaevi haud elevato, guttis utrinque ad medium albo-pilosis, elytris maculis albopubescentibus variegatis, seriatim foveatim punctatis, interstitiis subrugosis. Long. ·2.

One specimen found at San Francisco. Nearly allied to *A. foveolatus*, (Tyloderma foveolatum *Say*,) but distinguished by the thorax being not carinate, much less densely foveolate and not narrowed or rounded on the sides behind the middle; also by the spots being formed of white instead of yellow pubescence.

RHYNCOPHORUS Schönherr.

R. asperulus, elongato-ovalis, niger nitidus, fronte foveato, rostro ad latera punctato, thorace latitudine longiore, minus subtiliter punctato, punctis ad latera asperatis, linea dorsali vix distincta; elytris striis fortiter punctatis, interstitiis uniseriatim subtiliter punctatis, seriebus saepe paulo confusis. Long. ·5.

One specimen, Sacramento; Mr. Wittick. The punctures of the thorax become gradually muricated towards the sides, where they are acute and terminated by a very short bristle.

SPHENOPHORUS Schönherr.

S. gentilis, piceo et rufo-piceo variegatus, nitidus, elongatus, rostro cylindrico, punctato, ad basin canaliculato, canali in fovea frontali desinente; thorace latitudine longiore, lateribus parallelis antice rotundatis, ad apicem breviter tubulato, dense grosse punctato, linea latiuscula dorsali laevi; elytris striis valde profundis, modice punctatis, interstitiis uniseriatim subtiliter punctatis. Long. ·28—·36.

San José, California; belongs with most of our native species to the division of the genus with narrow tarsi and cylindrical rostrum, but differs from all others in my collection by the thorax being without impressions, and having only a single elongated dorsal smooth space.

DENDROCTONUS Er.

D. valens, rufo-piceus, flavo-hirtus, capite rugose punctato, thorace latitudine breviore, lateribus postice fere parallelis antice convergentibus, ad apicem sinuato, ad basin late bisinuato, confertissime punctato, linea tenui dorsali pone medium sublaevi, antice vage transversim impresso, subtubulato ; elytris cylindricis confertim granulato-punctatis, striis vagis, foveatim punctatis. Long. ·34.

One specimen, San Francisco ; Mr. Child. Much larger and broader than the next species, and differs from the large species of the Atlantic States by the finer and denser punctuation of the thorax.

D. similis, rufo-piceus, flavo-hirtus, capite rugose punctato canaliculato, canali interrupto, thorace latitudine breviore, a basi antrorsum sensim angustato, lateribus rotundatis, ad apicem profundius sinuato, ad basin late bisinuato, confertissime punctato, antice vage transversim impresso subtulato ; elytris cylindricis confertim granulato-punctatis, striis vagis foveatim punctatis. Long. ·25.

Oregon, abundant ; collected by Col. McCall and Dr. Cooper.

BOSTRICHUS Fabr.

B. pubipennis, cylindricus longiusculus, nigro-piceus, thorace latitudine sesqui longiore, ante medium tuberculato et exasperato parce puberulo, pone medium parce punctulato, elytris subtilissime punctulatis dense flavo-puberulis et parce setulosis, postice oblique declivibus haud armatis ; capite plano marginibus longe flavo-pilosis. Long. ·1.

San José, California.

CORTHYLUS Er.

C. scutellaris, cylindricus, piceo-niger, nitidus, capite convexo scabro, thorace latitudine haud sesqui longiore, ante medium sensim asperato ; elytris versus basin indeterminate rufo-piceis, subtiliter subseriatim parce punctatis, postice declivibus, granulis tribus vel quatuor parvis armatis ; pedibus antennisque rufis, his clava obscuriore. Long. ·13.

One specimen, San José, California. Less elongate than *C. fasciatus*.

ERGATES Serv.

E. spiculatus, elongatus piceus, capite profundissime canaliculato, tuberculo suboculari valde acuto, elytris rugose punctatis. Long. 2·15—2·55. Tab. II, fig. 9.

Mas antennis longioribus, extrorsum attenuatis, articulis 3—4 punctis elevatis exasperatis, thorace latitudine duplo breviore subtiliter dense scabro, vage inaequali antice biimpresso, lateribus serratis, femoribus anticis subtus tranversim rugosis. Fig. 9*a*.

Femina, antennis corpore duplo brevioribus, articulis punctatis, thorace antrorsum angustato, lateribus inaequaliter longe spinosis, dense fortius scabro inaequali, antice utrinque subcalloso.

Lec. Proc. Acad. Nat. Sc. 7, 218.

Trichocnemis spiculatus Lec. Journ. Acad. Nat. Sc. 2nd ser. 2, 110.

Oregon and California. The genus Trichocnemis was established by me upon the female of this species, under the belief that the pubescence of the anterior feet differed from that of Ergates. But on comparing with the European species, I find no sufficient reason why they should not be placed together, and it therefore gives me pleasure to make the necessary correction.

ASEMUM Serv.

A. asperum, nigro-piceum, tenuiter pubescens, capite scabro-punctato, oculis magnis valde emarginatis, thorace latitudine breviore rotundato punctato, medio late excavato, versus latera punctis elevatis exasperato, elytris subtiliter scabris, lineis duabus obsoletis vix distinctis. Long. ·7—·9.

Lec. Proc. Acad. Nat. Sciences, 7, 18.

Prairie Paso, Dr. Cooper, found in July and August. This fine species seems intermediate between Criocephalus and Asemum ; the eyes though as large as in the former genus are deeply emarginate ; the antennae are hardly half as long as the body, and pubescent. The discoidal excavation of the thorax does not extend much in front of the middle.

OPSIMUS‡ Esch.

O. quadrilineatus, piceus pubescens, capite punctato, canaliculato, thorace confertissime punctulato, canaliculato, lateribus medio spina acuta retro tendente armatis, pone spinam concavis, ante spinam rotundatis ; elytris elongatis, saepe fusco-testaceis, densissime punctulatis, lineis utrinque duabus tenuibus elevatis, tertiaque externa obsoleta; femoribus crassis, oculis divisis. Long. ·37. Tab. II, fig. 10.

Mann. Bull. Mosc.

Sitkha, Baron Chaudoir and Col. Motschulsky ; Oregon, Dr. Cooper. The genus Opsimus was founded upon this species, but I have not found any description of it in print. It is closely allied to Tetropium (Criomorphus *Muls.*) in the form of the head and eyes, but the maxillary palpi are much longer than the labial, and the anterior coxae are not transverse, and but slightly angulated externally ; the antennae taper gradually outwards, and are quite hairy, much longer in the male than in the female.

CALLIDIUM Fabr.

C. aeneum, aeneo-piceum, parcius pubescens, thorace latitudine breviore, rotundato punctulato, antice posticeque marginato, elytris thorace paulo latioribus, nitidissimis, parce punctatis, femoribus valde clavatis, antennis ad basin rufescentibus. Long. ·3.

Phymatodes aeneus Lec. Proc. Acad. Nat. Sc. 7, 18.

One specimen found by Dr. Cooper on the journey from Vancouver to Yokolt Plain. This species somewhat resembles in appearance *C. aereum* Newm.

C. Mannerheimii, piceum subtiliter dense pubescens, thorace latitudine breviore, lateribus rotundatis, utrinque angustato, dense punctulato, linea dorsali sublaevi, elytris a basi ad dimidium obscure ferrugineis, femoribus ad basin rufo-piceis. Long. ·44.

Callidium dimidiatum‖ Mann. Bull. Mosc. 1846.

One specimen, Steilacoom, Dr. Suckley. Resembles *C. dimidiatum* Kirby, (palliatum *Hald.*,) but differs in the thorax, being narrowed before as well as towards the base.

C. vulneratum, nigro-piceum nitidum, capite thoraceque fortius punctatis, hoc latitudine vix breviore, lateribus late rotundatis, ad basin angustato, parce pilosello; elytris a basi ad medium fortiter minus dense punctatis, obscure ferruginus, dein subtiliter punctulatis nigro-piceis, fascia transversa albicante subelevata ad medium notatis. Long. ·35.

One specimen, found at San Francisco by Mr. Child. The whitish fascia is slightly elevated, and is directed slightly forwards from the margin to the suture.

C. decussatum, piceum nitidum parce pubescens, capite dense, thorace fortius punctato, latitudine vix breviore, lateribus rotundatis, antice posticeque angustato, antice transversim impresso, linea dorsali sublaevi, elytris parce fortiter punctatis, versus apicem sensim laevibus, ad basin pallidioribus, fascia postice obliqua ante medium, alteraque antice tendente pone medium albicantibus subelevatis ornatis. Long. ·25.

One specimen, Sacramento, California, Mr. Wittick. The two fasciae, with those of the opposite side, produce a figure nearly like the diagonals of a square; the anterior one is suddenly angulated near the margin.

Crossidius Lec.

C.? hirtipes, ater, thorace confertim punctato latitudine breviore, lateribus obtuse armatis, ad basin marginato, disco utrinque pone medium subfoveato; elytris confertim subtilius punctatis, fulvis sutura basique nigromarginatis, abdomine sanguineo ad basin obscuro; subtus parcius longe pilosus, tibiis intus dense pilosis. Long. ·5.

Lec. Proc. Acad. Nat. Sc. 7, 18.

One specimen, found by Dr. Cooper on the journey from Wenass river to Fort Colville. The palpi and antennae are destroyed; it should possibly form a separate genus, as the mandibles are emarginate at tip, as in Crossidius, while the thorax, as in Purpuricenus, is obtusely armed at the sides. The upper surface may have been hairy, but the hair has been entirely removed; the elevated lines are hardly visible.

The genus Crossidius was constructed by me upon a pale yellow hairy insect from San Diego, having the antennae 12-jointed, the mandibles emarginate, the thorax rounded, the elytra not truncate, and the body very hairy.

Rosalia Serv.

R. funebris, supra holosericea, capite atro, thorace cinereo, macula magna ovali dorsali alteraque utrinque minore nigris, 4-tuberculato; scutello cinereo, elytris atris, fascia ante medium, altera pone dodrantem, margineque apicali cinereis, punctoque sublaterali pone medium saepe ornatis; subtus cinereus holosericeus, antennis cinereo-annulatis. Long. 1·08—1·32. Tab. II, fig. 11.

Motschulsky, Bull. Mosc. 1845, 1, 87, tab. 2, fig. 8; Mann. *ibid.* 1852.

Rosalia alpina (err. typog.) Lec. Journ. Acad. Nat. Sc. 2d ser. 2.

Oregon, at the Dalles, Dr. Suckley, and at Steilacoom, Mr. Gibbs. Found at Sitkha, according to Motschulsky. Varies with the lateral whitish dot of the elytra wanting; also, with the posterior fascia interrupted at the suture, and not extending to the margin; the fasciae vary much in breadth, and are sometimes dilated at the suture.

Clytus Fabr.

C. conjunctus, niger, thorace latitudine paulo breviore, margine antico flavo, dorso longitudinaliter elevato, et carinulis quatuor vel quinque transversis notato; elytris annulo basali interrupto ad suturam extendente, fasciisque duabus posticis linea suturali connexis pallide

flavis; abdomine flavo, nigro annulato; femorum basi tibiis tarsis antennisque ferrugineis, femoribus posticis modice elongatis. Long. ·65.

One specimen, San Francisco, Mr. Child. Similar to *C. capraea*, but, besides slight differences in the form of the basal yellow ring-like mark, the two posterior fasciae are connected by a yellow sutural line.

Ulochaetes Lec.

Caput deflexum, fronte quadrato perpendiculari, pone oculos subito at parum constrictum; oculi emarginati; antennae inter oculos pone medium insertae; palpi breves articulis turbinatis subaequalibus; antennae corporis dimidio aequales, articulis 3io et 4to conjunctis 5to aequalibus. Thorax transversus lateribus et dorso acute tuberculatus, densissime pilosus. Elytra abbreviata, scabra ad apicem subacute rotundata, humeris valde elevatis. Tarsi posteriores articulo 1mo sequentibus conjunctis aequali. Alae abdomine longiores rectae.

This genus contains but one very remarkable species allied to Necydalis. It differs, however, by its much less elongate form, by its less constricted neck, and also by the different proportions of the joints of the antennae; the elytra diverge posteriorly, showing a tendency to a subulate form.

U. leoninus, niger, capite griseo-pubescente, thorace antrorsum angustato densissime longe griseo-piloso, antice valde transversim impresso, postice paulo constricto, elytris opacis ad apicem late testaceis; tibiis testaceis apice nigris; antennis basi obscure testaceis, alis fuliginosis. Long. ·96. Tab. II, fig. 12.

Lec. Proc. Acad. Nat. Sc. 7, 82.

One specimen, found at Prairie Paso by Dr. Cooper. The scutel is smooth and shining, with the sides hairy; the pectus is thinly clothed with grayish hairs.

Acmaeops Lec.

A. coriacea, nigro-picea, crassa, parum nitida, thorace lateribus acute tuberculatis, elytris postice obtusis, rugosis. Long. ·75. Tab. II, fig. 13.

Lec. Proc. Acad. Nat. Sc. 7, 219.

Piodes coriacea Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 318.

Oregon. From its large size and stout form this insect resembles in appearance a small Prionus, and was, therefore, placed by me as a separate genus; on a careful reconsideration, I could find no characters of importance by which to retain it as distinct from Acmaeops.

A. fusca, pubescens, fusca, capite confertim punctato, canaliculato, thorace confirtim punctato, latitudine vix breviore, antrorsum angustato et ibi lateribus rotundato, ad apicem vix constricto fortius marginato, linea dorsali postica laevi; elytris sat dense versus basin paulo fortius ad apicem subtilius punctatis, parallelis postice obtusis. Long. ·5.

Sacramento, Mr. Wittick. Allied to *A. californicus* Lec., but is larger and stouter, with the thorax less rounded on the sides, which are parallel behind the middle; the thorax is also more strongly margined and less constricted at the apex; the punctures of the elytra towards the base are smaller and more dense than in that species, and the humeri are less prominent.

A. lugens, atra pubescens, capite confertim punctato canaliculato, thorace confertim punctato, linea dorsali postica laevi, latitudine breviore, lateribus antice valde rotundatis, ad apicem

fortius marginato, subito constricto et breviter tubulato; elytris sat dense postice subtilius punctatis, parallelis postice obtusis. Long. ·5.

One specimen, found at Sacramento by Mr. Wittick. Resembles the preceding, but the form of the thorax is very different.

A. subcyanea, nigra parce pubescens, capite thoraceque minus dense punctatis, hoc linea dorsali sublaevi, latitudine haud breviore, antrorsum subangustato, lateribus antice paulo rotundatis, ad apicem constricto breviter tubulato; elytris antice fortiter minus dense, postice subtilius punctatis, obscure cyaneis, parallelis postice obtusis. Long. ·41.

San Francisco, Mr. Child. Also related to the preceding and to the next species, but differs by the thorax being less densely punctured. The elytra are more coarsely and less densely punctured towards the base than in *A. lugens* and *fusca*, resembling in this character *A. subaenea* Lec., from which it differs by the thorax being broadly rounded, and not angulated at the sides.

A. tumida, cyaneo-atra pubescens, capite thoraceque confertim punctatis, hoc linea dorsali laevi, latitudine breviore, convexo, lateribus postice parallelis, antice valde rotundatis, ad apicem valde constricto et tubulato; elytris antice fortiter minus dense, postice subtilius punctatis, a basi paulo angustatis postice obtusis. Long. ·42.

One specimen, San Francisco, Mr. Child. The thorax is formed as in *A. lugens*, but the elytra are punctured as in *A. subcyanea*.

Toxotus Serv.

T. flavo-lineatus, niger flavo-pubescens, thorace antice posticeque valde constricto, nitido parcius punctulato, canaliculato, lateribus tuberculo magno acuto armatis; elytris a basi angustatis, thorace duplo latioribus dense punctulatis et rugosis, margine a basi fere ad apicem vittaque utrinque dorsali postice evanescente antice abbreviata ornatis ad apicem oblique subtruncatis. Long. 1·0.

Lec. Proc. Acad. Nat. Sc. 7, 18.

One specimen, found by Dr. Cooper on the journey from Vancouver to Yokolt Plain. The elytra on each side of the yellow discoidal vittae are marked with a distinct elevated line.

T. spurcus, testaceus, supra parce subtiliter pubescens, capite canaliculato, subtiliter thorace evidentius rugose punctato, hoc canaliculato latitudine paulo longiore antrorsum angustato, utrinque transversim valde impresso, lateribus spina valida acuta armatis; elytris thorace duplo latioribus parallelis postice obtusis spina brevi suturali armatis, antice fortius postice subtilius punctatis, gutta submarginali ad medium strigisque duabus posticis nigricantibus. Long. ·96.

Steilacoom, one specimen, Mr. Gibbs. Of the same form as *T. Schaumii* Lec., but the elytra are not obliquely truncate at tip. The elytra of the male are therefore probably slightly narrowed from the shoulders. The fourth joint of the antennae is a little shorter than the third, and one-half as long as the fifth.

Leptura Linn.

L. vitiosa, nigra, flavo-pubescens, capite rufo-variegato, thorace confertim punctato, latitudine breviore antrorsum angustato, lateribus subangulatis basique subito depressa testaceis, angulis posticis productis, disco nigro subcanaliculato, postice utrinque oblique impresso; elytris punctatis, flavis macula laterali ad medium apiceque late nigris, a basi angustatis ad apicem

oblique emarginatis; pedibus testaceis, femoribus, tibiis que posticis ad apicem, genubus tarsisque nigris, antennis pallido annulatis. Long. ·7.

Strangalia vitiosa Lec. Proc. Acad. Nat. Sc. 7, 18.

Fort Vancouver and Prairie Paso, Dr. Cooper. In one specimen the third joint of the antennae is entirely black; in the other it is pale at the base, like the following ones. This species closely resembles *L. obliterata*, but the thorax is shorter and more broad behind. The impressions are much stronger, and the disc is separated from the base by a sudden declivity. The basal margin is yellow; and on the elytra there is no trace of the two spots before the middle, seen in *S. obliterata*, and the apex is not at all rufous.

The testaceous sides of the thorax and annulated antennae were not mentioned in the description given by me of Strangalia *obliterata*, (Journ. Ac. Nat. Sc. 2d ser. 1, 328,) as, on account of the very dark color of the only specimen then known to me, they were not observed.

L. impura, longiuscula, sordide testacea, flavo-pubescens, capite thoraceque obscuris dense punctatis, illo linea frontali subtili, thorace latitudine paulo longiore, convexo, lateribus postice parallelis ad medium subangulatis, ad apicem breviter constricto; elytris confertim punctatis, macula rotundata submarginali ad medium nigricante notatis, a humeris postice subangustatis ad apicem oblique truncatis. Long. ·4.

One specimen, without antennae, sent by Mr. Wittick from Sacramento. Quite distinct from every other species known to me, and, although of a slender form, seems to belong to the (A—7) division of Strangalia.—(Vide Journ. Acad. Nat. Sc. 2d ser. 1, 332.)

L. laeta, crassiuscula nigra dense sericeo aureo-pubescens, thorace convexo, utrinque constricto, lateribus valde rotundatis, medio tuberculatis; elytris nigris, fasciis quatuor latis flavis aureo-pubescentibus, fasciis secunda et tertia ad suturam connexis; pedibus ferrugineis, antennis corporis dimidio haud longioribus crassis, oreque obscure ferrugineis. Long. ·6.

California, at Sacramento, Mr. Wittick; Steilacoom, Mr. Gibbs. A very beautiful species, allied to *L. nitens*, but very distinct. The anterior yellow fascia is curved, and sometimes connects with the second at the suture.

L. amabilis, elongata nigra, supra parce subtiliter pubescens, capite thoraceque confertissime punctatis, hoc latitudine haud longiore, antrorsum angustato, lateribus rotundatis, ad apicem constricto, ante basin transversim impresso, angulis posticis acutis; elytris intra humeros longius impressis, confertim punctatis, macula rotundata prope scutellum, fascia postice obliqua ante medium, altera latiore ad trientem ab apice, et macula rotundata ante apicem pallide flavis, postice subangustatis, ad apicem oblique emarginatis; antennis pedibusque obscure ferrugineis, femoribus infuscatis. Long. ·3.

A very beautiful little species, of which a single specimen was collected by Mr. Gibbs at Steilacoom. It belongs, with the preceding, to division (A—7) of Strangalia.

L. valida, elongata, testacea, subtilius pubescens, thorace parvo latitudine longiore, ante medium angustato, utrinque constricto, canaliculato, dense subtilius punctato, parceque grosse punctato; elytris thorace duplo latioribus, nebulis duabus ante medium, duabus ad medium alteraque maiore ante apicem fuscis, parallelis postice obtusis, spina suturali prominula. Long. 1·05. Tab. II, fig. 14.

One specimen, from Shoalwater Bay, Dr. Cooper. Of the anterior spots, the inner is larger;

but of the pair at the middle, the outer one is larger, near the margin, and placed in advance of the inner one.

L. crassipes, elongata, nigra, capite thoraceque longius flavo-pilosis, hoc latitudine longiore, convexo, antrorsum, parum angustato, utrinque constricto, lateribus medio valde rotundatis; elytris fortius punctatis, breviter pubescentibus, intra humeros longius impressis, luteis margine tenui, macula subhumerali altera ad medium trienteque postica nigris, macula flava rotundata ante apicem signatis, postice subangustatis ad apicem oblique truncatis; pedibus crassiusculis testaceis, antennis validis nigris. Long. ·44.

Steilacoom, Mr. Gibbs. The black spots of the elytra are all connected by a narrow black margin. The elytra are shaped as in *L. octonotata* Say, but the thorax is deeply constricted at each end; this species, with the next, and *Frankenhaeuseri* and *macilenta*, form a group not represented in the Atlantic States, somewhat approaching Centrodera *Lec.* in form.

L. fuscicollis, elongata testacea, capite thoraceque nigro-fuscis, breviter pubescentibus, densissime punctatis, hoc latitudine longiore, antrorsum angustato, utrinque profunde constricto, lateribus medio obtuse tuberculatis, subtiliter canaliculato, elytris fortius punctatis, glabris, testaceis a humeros subangustatis, intra humeros impressis, ad apicem vix truncatis; antennis elongatis fuscis. Long. ·48.

One specimen, San Francisco; Mr. Child.

Plectrura Mann.

P. *producta*, nigro-picea, parce griseo-bupescens, guttulis flavo-pubescentibus parce adspersa, confertim rugose punctata, thorace callo dorsali parvo, elytris callis nitidis seriebus quinque digestis, ad apicem non crenulatis, singulatim longe acuminatis. Long. ·5. Tab. II, fig. 15.

Lec. Proc. Acad. Nat. Sc. 7, 19.

One specimen, collected by Dr. Cooper at Fort Vancouver. Differs from the description of *P. spinicauda* by the tips of the elytra being not crenulated, as well as by the different arrangement of the tubercles of the elytra. They form five series, of which only the outer one is entire; the others contain only three or four tubercles; the sutural one is indistinct, the second ends just behind the middle, the third and fourth commence about one-third from the base, and end at one-fifth from the apex; the scutellum and a little thoracic line anterior to it are densely clothed with yellow hair.

Tetraopes Dalman.

T. oregonensis, niger, capite thorace elytrisque coccineis (pallide pubescens?) thorace punctis 4 nigris, disco subito elevato, antice posticeque valde constricto, lateribus subito valde dilatatis, parcius punctato, elytris parce punctatis, puncto humerali duobus ante medium, altero utrinque pone medium, scutelloque nigris; pedibus antennarumque articulo primo coccineis, tarsis, genubus, tibiisque posticis nigris. Long. ·55.

Lec. Proc. Acad. Nat. Sc. 7, 19.

Wenass river to Fort Colville; Dr. Cooper. This species has the form of *T. femoratus* Lec., but the thorax is still more dilated on the sides. From *T. basalis*, in which the basal joint of the antennae is also red, it is easily distinguished by the sudden elevation of the middle of the thorax. The pubescence has been removed by the alcohol in which the specimens were pre-

served, and I cannot, therefore, know whether the antennæ are black or annulated. The black spots are very small, those of the elytra are in the usual position, and, with the exception of the humeral one, disappear in many specimens.

MESOSA Serv.

M. Guexi, atra dense breviter cinereo-pubescens, thorace parce pnnctato antice modice constricto, lateribus breviter tuberculato, elytris thorace plus sesqui latioribus, parce punctatis versus basin scabris, maculis duabus transversis undulatis nigris utrinque ornatis, antennis annulatis. Long. ·8. Tab. II, Fig. 16.

Lec. Journ. Acad. Nat. Sc. 2d ser. 2, 166.

A female found by me, at Benicia, and two males collected by Dr. Heermann, in California. The male has longer and more hairy antennae, and the elytra slightly narrowed behind the humeri.

DONACIA Fabr.

D. pyritosa, elongata, cupreo-ænea, capite non toroso, thorace confertissime rugoso, postice haud angustato, angulis omnibus subprominulis, canaliculato ante basin transversim impresso, tuberculo laterali, parvo, distincto, parum prominulo; elytris convexis parallelis, dense rugosis, punctato-striatis, vage biimpressis postice rotundatis; antennis fusco-nigris, crassiusculis, articulis 2—4 sensim longioribus, femoribus posticis dente acuto armatis; pedibus ferrugineis, femoribus ad apicem infuscatis. Long. ·32.

One specimen, Shoalwater Bay; Dr. Cooper. Closely resembles *D. pusilla*, but the thorax is not narrowed behind; the anterior lateral tubercles are smaller and less prominent; the elytra are broader and more finely rugous.

SYNETA Esch.

S. albida, pallida elongata, capite thoraceque grosse punctatis, hoc lateribus medio acute tuberculatis, utrinque constricto, antrorsum subangustato; elytris confertim seriatim punctatis, costa dorsali obsoleta alteraque a humero ad apicem extensa. Long. ·28.

Oregon; Mr. Townsend and Dr. Suckley.

S. simplex, testacea, capite thoraceque paulo obscurioribus confertim punctatis, hoc latitudine vix breviore lateribus medio obtuse tuberculatis, utrinque modice constricto, elytris fortius vix ordinatim punctatis, costa parum elevata a humero extensa postice obsoleta; antennis obscuris ad basin pallidis. Long. ·27.

Steilacoom, Dr. Suckley; one specimen.

SAXINIS Lac.

S. saucia, ovata convexa, chalybea nitida, thorace antrorsum valde angustato, lateribus rotundatis depressis, medio valde convexo, subtilissime, lateribus fortius punctulatis, ad basin marginato bisinuato, medio late subtruncato, elytris subconfuse punctato-striatis, macula magna humerali rufa ornatis; subtus pygidioque cinereo-pruinosis. Long. ·3.

A fine and large species found in Oregon and California.

EUMOLPUS Kugellan.

E. smaragdulus, supra viridi aeneus nitidus, confertim punctatus, pube brevi rigida alba parce vestitus, capite aequali, thorace convexo lateribus rotundato, elytris fortius inordinatim punctatis. Long. ·15.

One specimen, Sacramento, Mr. Wittick. Resembles in generic characters several other species, which, in form, appear like Pachnephorus, but they are distinguished by the posterior tibiae being not toothed, while the claws are strongly toothed. I have not found any description or name for this genus, which is readily known by these two characters, and by the thorax not being lobed behind the eyes.

CHRYSOCHUS Redt.

C. cobaltinus, splendide cyaneus vel viridi-cyaneus, nitidus, thorace parce punctulato et disperse grosse punctato, lateribus postice parallelis, antice subito rotundatis, angulis anticis prominulis, elytris modice punctatis. Long. ·45.

Oregon and California. Larger than *C. auratus*, and distinguished by the sides of the thorax being more suddenly rounded near the apex, and by the elytra being less sparsely and more distinctly punctured.

HALTICA Fabr.

H. puncticollis, flavo-testacea, ovalis modice convexa, thorace latitudine breviore, antrorsum angustiore, fortius punctato, guttis quatuor nigris ornato, scutello, elytrorum vitta suturali, altera sub marginali ad apicem connexis, dorsalique postice paulo abbreviata nigris; labro, palpis, antennis tibiis tarsisque nigris; metasterno testaceo, postice nigro. Long. ·3—·35.

Oregon and California. Resembles closely *H. alternata*, but differs by the thorax being much more distinctly punctured, and by only the posterior part of the metasternum near the middle is black. I have adopted the name under which it was sent me by Col. Motschulsky.

H. limbicollis, elongato-ovalis, nigra, capite parce punctulato, lateribus et basi marginatc, limbo toto flavo, elytris subtilius sat dense punctatis, vittis duabus margineque tenui flavis ad apicem connexis. Long. ·3.

Sacramento, Mr. Wittick. Similar to *H. pensylvanica*, but narrower, with the thorax sparsely punctured. The elytra are not sulcate, and the yellow vittae are broader.

H. prasina, olivaceo-aenea, thorace latitudine breviore, antrorsum haud angustato, lateribus subrectis marginatis, punctato, postice transversim sulcato; elytris subsulcatis punctulatis, costa submarginali postice ad suturam flexa. Long. ·23.

San Francisco. Narrower than *H. plicipennis*, and distinguished by the more strongly punctured thorax not being narrowed anteriorly, and by the elytra being feebly sulcate.

H. obolina, oblonga, cupreo-aenea, thorace nitido convexo, latitudine breviore, antrorsum paulo angustato, lateribus vix rotundatis, parce punctulato, postice transversim sulcato, elytris sat dense punctatis haud costatis. Long. ·17.

San Francisco, not common. The more convex thorax distinguishes this from some allied species in my collection.

H. lazulina, oblonga, viridi-cyanea, nitida, thorace latitudine breviore, antrorsum subangustato, lateribus paulo rotundatis, subtiliter punctulato, postice transversim subtilius impresso; elytris subtiliter fere obsolete punctulatis. Long. ·15.

Steilacoom, one specimen, Mr. Gibbs. Resembles in size and form *H. punctipennis*, Lec., (Report of Capt. Pope's Expedition,) but is distinguished by the blue color and the obsoletely punctured elytra.

H. cerina, flavo-testacea, nitida, ovalis convexa, thorace parce subtiliter punctulato, convexo, lateribus rotundatis; elytris subtiliter punctato-striatis, ad latera et apicem laevibus; ore postpectoreque paulo infuscatis. Long. ·06.

One specimen, San José, California. This species seems to belong to the division named Crepidodera, by Chevrolat, but the thorax has no posterior impression.

H. aereola, oblonga, cupreo-aenea, nitida, capite angulatim impresso, occipite laevi, thorace subrugoso, grosse confertim punctato, postice transversim sulcato, et striola brevissima utrinque insculpto; elytris fortiter striato-punctatis, interstitiis subtilissime punctulatis, antennis pedibusque ferrugineis. Long. ·1—·13.

San Francisco; allied closely to *H. helxines*, but the thorax is more punctured and less convex, and the posterior transverse impression is less deep, and does not extend beyond the short basal striae.

H. subcrinita, oblonga, obscure aenea, capite angulatim impresso, occipite laevi, thorace confertim punctato, postice transversim sulcato et fovea parva basali utrinque notato; elytris cinereo-pubescentibus, fortiter striato-punctatis, interstitiis parce rugosis et punctulatis; antennis pedibusque testaceo-piceis, femoribus posticis obscuris. Long. ·05—·07.

San Francisco. Allied to *H. pubescens*, but narrower and less pubescent; the thorax is less coarsely and less densely punctured.

H. ligata, elongata, nigra glabra, thorace latitudine breviore, sat punctato, piceo-nebuloso, lateribus late rotundatis, versus latera postice obsolete impresso, elytris sat dense punctatis, stria suturali obsolete impressa, vitta dorsali lata testacea utrinque ornatis, antennis pedibusque piceo-testaceis, femoribus posticis nigris. Long. ·15.

One specimen, San José, California. Belongs to the division *Systena,* of Chevrolat, and is allied to *H. elongata* Fabr., (*tæniata* Say,) but the thorax is shorter and more gradually rounded on the sides.

H. subœnea, elongata, aeneo-nigra glabra, capite parcius, thorace sat dense minus subtiliter punctato, latitudine fere sesqui breviore; elytris sat dense minus subtiliter punctatis; antennis pedibusque fusco-testaceis, illis articulo primo, his femoribus obscuris, posticis autem nigris. Long. ·15.

One specimen, San José, California. Belongs also to the division *Systena*, and is similar in appearance to *H. frontalis*, but the thorax is broader and strongly punctured.

H. albionica, oblongo-elongata, aeneo-nigra, nitida, capite parcius, thorace elytrisque minus subtiliter punctatis; thorace latitudine breviore antrorsum angustato, antennis pedibusque nigris. Long. ·08.

San José and San Diego, California. Of the size of *H. striolata*, but narrower and less convex.

H. lepidula, oblonga, aeneo-nigra, nitida, capite parcius, thorace elytrisque minus subtiliter punctatis, thorace latitudine breviore antrorsum angustato; elytris utrinque vitta dorsali postice paulo flexa, et fere ad apicem extensa pallida ornatis; antennis pedibusque nigris. Long. ·11.

San José and San Diego. Similar in form and sculpture to *H. albionica;* the fifth joint of the antennæ of the male is conical and dilated.

PSYLLIODES Latr.

P. parvicollis, elongato-ovalis, antice angustior, aeneo-nigra, capite parce punctulato thorace confertim punctato, antrorsum angustato, angulis anticis oblique truncatis; elytris striato-punctatis, interstitiis paulo convexis punctulatis; antennis fuscis ad basin testaceis, tibiis tarsisque piceo-testaceis. Long. ·09.

San José, California. Of the same form as *P. punctulata* Mels., but with the striæ of the elytra deeper, more finely and closely punctured.

P. convexior, ovalis antice angustior, aeneo-nigra, capite parce, thorace confertim punctato antrorsum subangustato, angulis anticis oblique truncatis; elytris pernitidis convexis punctato-striatis, interstitiis planis parce subtilissime punctulatis; antennis fuscis ad basin testaceis, tibiis tarsisque fusco-testaceis. Long. ·10.

San José, one specimen. Larger and more convex than the preceding, but agreeing in form with a nondescript found at Lake Superior; it differs, however, in having the thorax more convex and less narrowed in front, and the elytra more rounded on the sides.

CHAETOCNEMA Stephens.

C. irregularis, oblonga, griseo-aenea, capite thoraceque fortius punctatis, hoc latitudine breviore, antrorsum haud angustato, spatio parvo dorsali postico laevi; elytris subparallelis convexis fortius confuse punctato-striatis. Long. ·08.

San José. Very distinct from the other species known to me, not only by the form, but by the irregular confused rows of punctures of the elytra.

LUPERUS Geoffr.

L. varipes, elongatus, supra cyaneo-viridis, haud politus, thorace quadrato, latitudine haud breviore, angulis rectis, lateribus antice paulo rotundatis sat dense punctato; elytris punctatis; subtus niger, pedibus anticis testaceis, tarsis et femorum dimidio basali nigro-fuscis, antennis fuscis ad basin fusco-testaceis. Long. ·19.

San Francisco. Very different from the other species known to me, by the square punctured thorax.

L. longulus, elongatus niger, thorace capiteque cyanescentibus, illo polito quadrato, latitudine fere longiore, subtiliter praecipue versus latera punctato, angulis rectis, lateribus subsinuatis; elytris virescentibus, subtiliter scabro-rugosis, versus latera obsolete striatis; pedibis antennisque nigris, his articulo secundo subpicescente. Long. ·2.

One specimen, Oregon. Also very distinct from any other North American species known to me.

GALLERUCA Geoffroy.

G. rudis, picea, ovata, convexa supra glabra, capite thoraceque rude punctatis, hoc late canaliculato, bifoveato, inaequali, antrorsum angustato, lateribus subangulatis; elytris sutura elevata costisque quatuor sublaevibus, interstitiis sulcoque marginali profunde rude punctatis. Long. ·4.

A very fine species found by Mr. Gibbs at Steilacoom. Belongs to the group named Adimonia; I am not prepared to adopt it as a genus, as I have failed to discover sufficient reason for its separation.

G. consputa, elongata, luteo-testacea, pubescens, confertim minus subtiliter punctata, capite linea media nigra, thorace canaliculato et untrinque ad latera vage impresso, vitta dorsali nebulaque laterali nigris; elytris intra humeros oblique, et versus latera a humeros postice late impressis, sutura elevata guttisque plurimis parvis nigris; subtus fusca, pedibus testaceis nigro-punctatis. Long. ·15.

San José, California. The lateral impression of the elytra extends from the humerus for two-thirds their length, running a little inwards from the margin, and becoming obsolete; the black spots along its inner margin are frequently confluent into a vitta.

G. guttulata, elongata, fusco-testacea, valde cinereo-pubescens, dense fortius punctata, thorace brevi late canaliculato, ad latera inaequali; elytris intra humeros oblique impressis, ad marginem late sulcatis, guttis rotundatis nigris parce subseriatim notatis. Long. ·19.

One specimen, San Francisco. Larger than the preceding, with the suture not elevated, and not black.

G. morosa, elongata, piceo-nigra, tenuiter cinereo-pubescens, capite subtiliter dense punctato, callis duobus supra antennas laevibus, thorace valde punctato, inaequali, medio profunde, versus latera vagius foveato; elytris thorace parum latioribus convexis, confertim minus subtiliter punctatis, sutura elevata, versus scutellum plana. Long. ·25.

One specimen, San Francisco.

Psyllobora Muls.

P. taedata, rotundata, supra pallida, thorace maculis quatuor obscuris, elytris subtiliter parcius punctulatis, maculis magnis testaceis nigro-variegatis confluentibus; subtus testacea, parapleuris pedibusque pallidis. Long. ·10.

San Francisco, abundant. Smaller than *P. 20-maculata* Muls.; the elytra are less strongly and less densely punctured; the spots are larger and confluent, of a paler color, with only some portions black; the parapleurae are also entirely white.

Chilocorus Leach.

C. fraternus, niger, nitidus, thorace lateribus rotundatis, elytris macula rotundata rubra utrinque ornatis, disco vix conspicue, versus marginem distinctius punctatis abdomine rufo, segmento primo medio nigro; epipleuris oblique declivibus parum concavis. Long. ·2.

One specimen, Sacramento, Mr. Wittick. Resembles in every respect *C. bivulnerus* Muls., except that the punctures of the elytra are less distinct and almost obsolete, and by the epipleurae being less concave anteriorly.

Hippodamia Muls.

H. moesta, rufescente-nigra nitida, dense subtiliter punctulata, macula rhomboidea frontali, thoracis margine laterali antice posticeque latiore, linea dorsali antica, guttisque dorsalibus. duabus albis; elytris thorace latioribus, macula laterali alba triangulari ad dodrantem ornatis Long. ·3.

Lec. Proc. Acad. Nat. Sc. 7, 19.

Prairie Paso, Dr. Cooper. The ungues are acutely toothed, as in most species of the genus; the white lateral spot of the elytra is between one-fourth and one-fifth from the apex, and in one specimen is slightly dilated along the margin.

COCCINELLA Linn.

C. subversa, hemispherica, nigra, capite ante oculos albo (ore clypeoque feminae nigris,) thorace subtiliter punctulato, lateribus rotundatis, macula quadrata utrinque ad angulos anticos apiceque albis; elytris distincte et subtiliter punctulatis, praecipue macula nigra obliqua utrinque ad medium notatis, scutello nigro. Long. ·2.

Lec. Proc. Acad. Nat. Sc. 7, 19.

Fort Vancouver. This species closely resembles *C. californica*, but is smaller, and much more distinctly punctulate on the elytra.

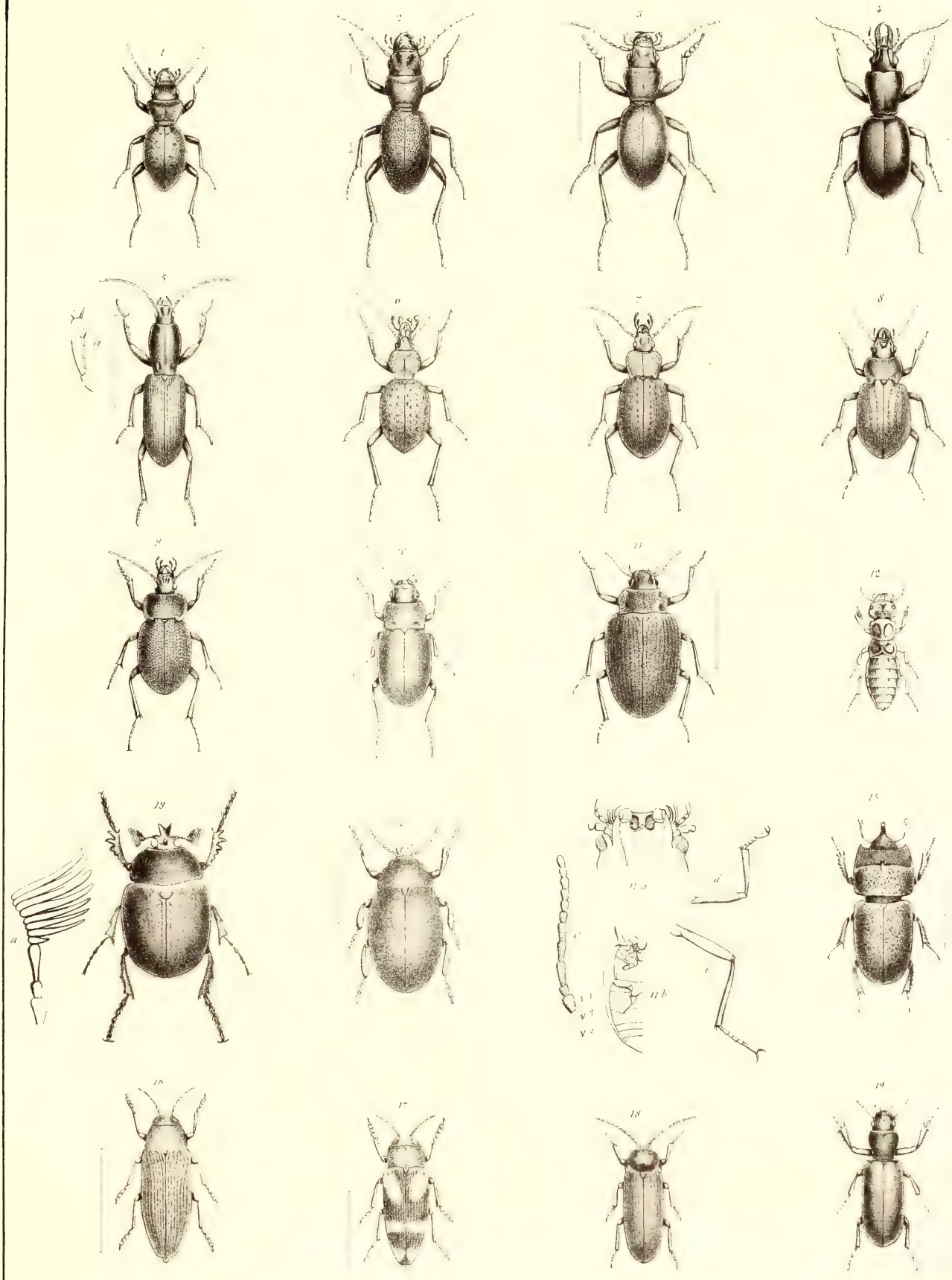
REFERENCES TO THE PLATES.

PLATE I.

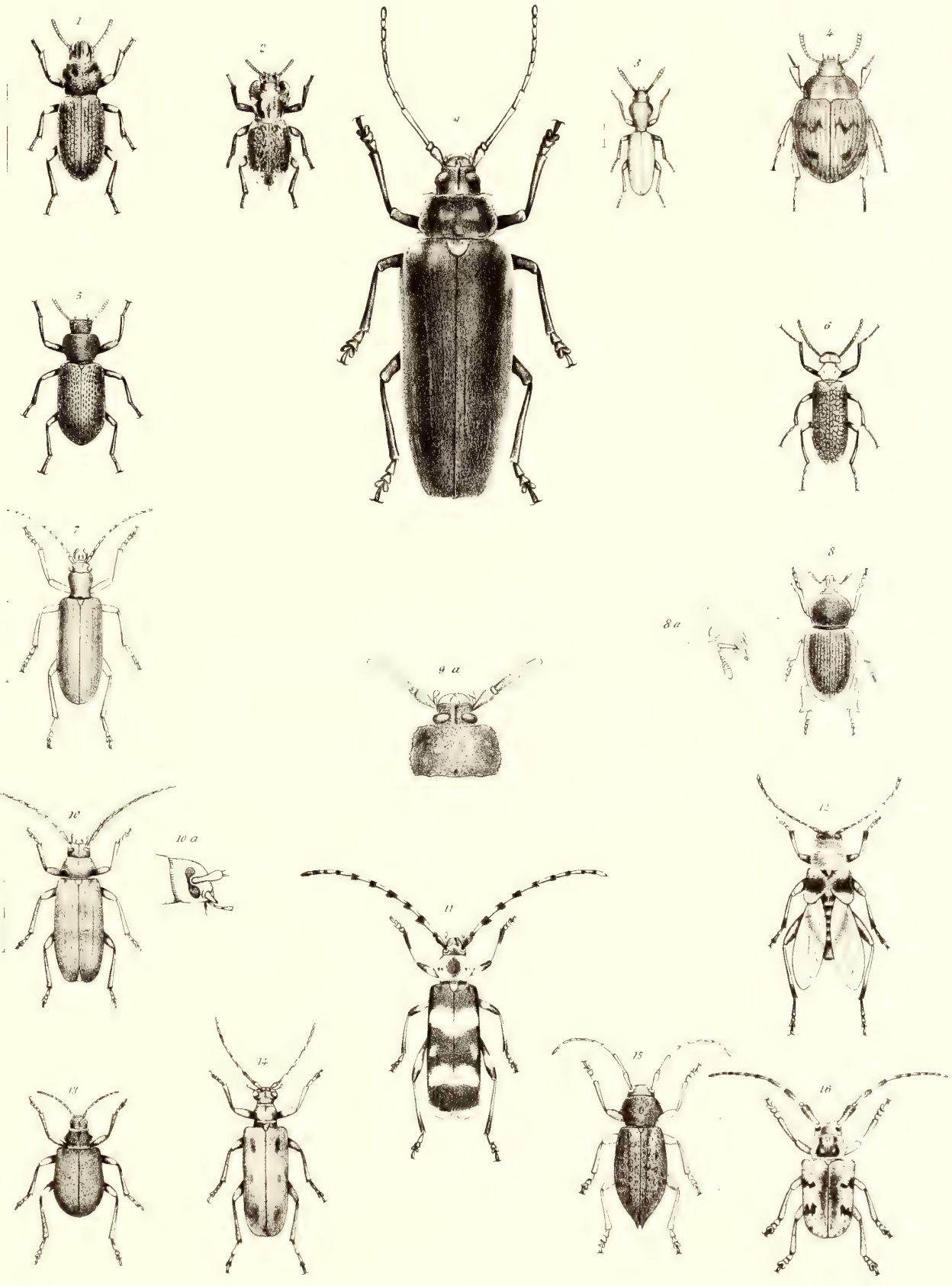
Fig. 1. Omus Dejeanii *Reiche.*
2. —— Audouinii *Reiche.*
3. —— californicus *Esch.*
4. Promecognathus laevissimus *Chaud.*
5. Agaosoma californicum *Ménétriés. a.* anterior tibia.
6. Cychrus tuberculatus *Harris.*
7. Carabus taedatus *Fabr.*
8. Calosoma cancellatum *Esch*
9. ———— discors *Lec.*
10. Trachypachys inermis *Motsch.*
11. Amphizoa Insolens *Lec.*
11*a*. ———— ——— under view of head.
11*b*. ———— ——— under view of trunk; *c.* Antenna; *d.* anterior leg; *e.* posterior leg.
12. Thinopinus pictus *Lec.*
13. Pleocoma fimbriata *Lec. a.* antenna.
14. Amphicyrta chrysomelina *Er.*
15. Sinodendron rugosum *Mann.*
16. Ancylochira Langii *Lec.*
17. ———— Gibbsii *Lec.*
18. Perothops Witticki *Lec.*
19. Exops ovicollis *Lec.*

PLATE II.

Fig. 1. Nyctoporis galeata.
2. Nosoderma diabolicum.
3. Cononotus sericans.
4. Phaleria globosa.
5. Nyctobates serrata.
6. Lytta Cooperi.
7. Ditylus vestitus.
8. Emphyastes fucicola.
9. Ergates spiculatus ♀.
9*a*. ——— ———— ♂.
10. Opsimus quadrilineatus.
11. Rosalia funebris.
12. Ulochaetes leoninus.
13. Acmaeops coriacea.
14. Leptura valida.
15. Plectrura producta.
16. Mesosa Guexi.



Bowen & Sibley & Co. Printers


1
2
3
4
5
6
7
8
8a
9a
10
10a
11
12
13
14
15
16

APPENDIX.*

CARABIDÆ.

LEBIA Latr.

cupripennis *Boh.*, Eugenies Resa, 7,.....'Cal.
angulata *Boh.*, ibid.....'Cal.
an potius Rhombodera?

DROMIUS Bon.

quadricollis *Lec.*, Pr. Acad. Nat. Sci. 1859, 82,.....Or.

CYMINDIS Latr.

abstrusa *Lec.*, Pr. Acad. Nat. Nat. Sci. 1859, 82,.....Or.

PLATYNUS Bon. (emend. Brulle.)

bembidioides *Lec.*,.....Or.
Sericoda bembidioides Kirby.

ANISODACTYLUS Dej.

semipunctatus *Lec.*, Pr. Acad. Nat. Sc. 1859, 83,..Or. Cal.

AGONODERUS Dej.

rugicollis *Lec.*, Pr. Acad. Nat. Sci. 1859, 83,.. .....Cal.

BADISTER Clairv.

anthracinus *Lec.*, Pr. Acad. Nat. Sci. 1859, 83,.....Or.

CHLÆNIUS Bon.

simillimus *Chaud.*, Bull. Mosc. 1856, 2, 283,.....'Cal.
Chlœnius vicinus‡ Mann.

BEMBIDIUM Illiger.

erasum *Lec.*, Pr. Acad. Nat. Sci. 1859, 83,.....Or.
obliquulum *Lec.*, ibid.,.....Cal.
aptum Lec., Pr. Acad. Nat. Sci. 1859, 281.

NEBRIA Latr.

livida *Lec.*, Pr. Acad. Nat. Sci., 1859, 84,.....Or.

DYTISCIDÆ.

COLYMBETES Clairv.

densus *Lec.*, Pr. Acad. Nat. Sci. 1859, 282,.....Or.

SILPHALES.

SILPHA Linn.

trituberculata *Lec.*,.....R.
Oiceoptoma trituberculatum Kirby.
Silpha sagax Mann.

NECROPHILUS Latr.

tenuicornis *Lec.*, Pr. Acad. Nat. Sci. 1859, 84,.....Or.
longulus *Lec.*, ibid., 282,.....Cal.

CATOPS Payk.

pusio *Lec.*, Pr. Acad. Nat. Sci. 1859, 282,.....Cal.

ANISOTOMA Fabr.

morula *Lec.*, Pr. Acad. Nat. Sci. 1859, 282,.....Cal.

STAPHYLINIDÆ.

PHILONTHUS Leach.

varicolor *Boh.*, Eug. Resa, 29,.....'Cal.

SUNIUS Leach.

rinotatus *Boh.*, Eug. Resa, 32,.....'Cal.

PÆDERUS Fabr.

cæruleipennis *Boh.*, Eug. Resa, 33,.....'Cal.

STENUS Latr.

chalybæus *Boh.*, Eug. Resa, 33,.....'Cal.

PHALACRIDÆ.

OLIBRUS Er.

aquatilis *Lec.*, Pr. Acad. Nat. Sci. 8, 17,.....Cal.
piceus Boh., Eug. Resa, 38.

HISTERIDÆ.

HISTER Linn.

sellatus *Lec.*, Pac. R. R. Rep. 47°, xi, 35,.....Cal.
Senevillii Mars., Ann. Ent. Fr. 3d ser. 5, 422, tab. 10, f. 119′.

NITIDULIDÆ.

RHYZOPHAGUS Herbst.

puncticollis *Boh.*, Eug. Resa, 39,.....'Cal.

TROGOSITIDÆ.

PELTIS Kug.

serrata *Lec.*, Pr. Acad. Nat. Sci. 1859, 84,.....Or.

COLYDII.

AULONIUM Er.

æquicolle *Lec.*, Pr. Acad. Nat. Sci. 1859, 84,.....Cal.

LASCONOTUS Er.

complex *Lec.*, Pr. Acad. Nat. Sci. 1859, 282,.....Cal.

CUCUJIDÆ.

PSEUDOPHANUS Lec.

signatus *Lec.*, Pr. Acad. Nat. Sci. 1859, 85,.....Or.

SCARABÆIDÆ.

CERUCHUS M'Leay.

striatus *Lec.*, Pr. Acad. Nat. Sci. 1859, 85,.....Or.

PHOBETUS Lec.

comatus *Lec.*, Journ. Acad. Nat. Sci. 2d, 3, 225,.....Cal.
Tryssus? comatus Lec., Pac. R. R. 47°, xi, 38.

POLYPHYLLA Harris.

crinita *Lec.*, Journ. Acad. Nat. Sci. 2d, 3, 230,.....Or. Cal.

LACHNOSTERNA Hope.

errans *Lec.*, Pr. Acad. Nat. Sci. 1859, 283,.....Cal.

DICHELONYCHA Kirby.

pallens *Lec.*, Pr. Acad. Nat. Sci. 1859, 283,.....Cal.

* This catalogue of species added to the fauna, since the publication of the preceding memoir in June, 1857, is contained in the Proceedings of the Academy of Natural Sciences of Philadelphia, 1859, pp. 287—292.

SERICA M. L.

serotina *Lec.*, Journ. Acad. Nat. Sci. 2d, 3, 275,.....Cal.
frontalis *Lec.*, ibid. 276,.....Or.
robusta *Lec.*, ibid. 276,.....Cal.

HOPLIA Illiger.

oregona *Lec.*, Journ. Acad. Nat. Sci. 2d, 3, 205,.....Or.
irrorata Lec., Rep. Pac. R. R. Exp., 40.
convexula *Lec.*, Journ. Acad. Nat. Sci. 2d, 3, 285,...Cal.
pubicollis *Lec.*, ibid. 285,.....Cal.
callipyge *Lec.*, ibid. 285,.....Cal.

APHODIUS Illiger.

militaris *Lec.*, Pr. Acad. Nat. Sci. 1858, 65,.....Cal.

ODONTÆUS Klug.

obesus *Lec.*, Pr. Acad. Nat. Sci. 1859, 282,.....Cal.

THROSCIDÆ.

LISSOMUS.

plagiatus *Boh.*, Eugen. Resa, 66,.....'Cal.

ELATERIDÆ.

PHLEGON Lap.

herculeanus‡ (Lac. Gen. Col. 4, 123,).....'Cal.

CORYMBETES Latr. (emend. Lec.)

tinctus *Lec.*, Pr. Acad. Nat. Sci. 1859, 85,.....Or.
protractus *Lec.*, ibid. 85,.....Or.

AGRIOTES *Esch.*

opaculus *Lec.*, Pr. Acad. Nat. Sci. 1859, 85,.....Or.

ELATER Linn.

tartareus *Lec.*, Proc. Acad. Nat. Sci. 1859, 85,.....Or.
cordifer *Lec.*, ibid. 72,.....Cal.
Lecontei Candèze, Mow. Elat. 2, 459, (May, 1859.)
ignobilis *Boh.*, Eugen. Resa, 68,.....'Cal.
variegatus *Boh.*, ibid. 69,.....'Cal.

ADELOCERA Latr.

rorulenta *Lec.*, Pr. Acad. Nat. Sci. 1859, 283,.....Or.
aurorata‡ Lec., Pac. R. R. Expl. 18.
cavicollis *Lec.*, Pr. Acad. Nat. Sci. 1859, 86,.....Cal.

CARDIOPHORUS Esch.

fenestratus *Lec.*, Pr. Acad. Nat. Sci. 1859, 86,.....Or.

ATOPIDÆ.

DASCYLLUS Latr.

Davidsonii *Lec.*, Pr. Acad. Nat. Sci. 1859, 283,.....Cal.

LAMPYRIDÆ.

PTEROTUS Lec.*

obscuripennis *Lec.*, Pr. Acad. Nat. Sci. 1859, 86,.....Cal.

TELEPHORIDÆ.

TELEPHORUS Geoffr.

peregrinus *Boh.*, Eugen. Resa, 80,.....'Cal.

MELYRIDÆ.

CHAROPUS Er.

mœrens *Lec.*, Pr. Acad. Nat. Sci. 1859, 283,.....Cal.

PTINIORES.

XYLETINUS Latr.

puberulus *Boh.*, Eugen. Resa, 88,.....'Cal.

ANOBIUM Fabr.

marginicolle *Lec.*, Pr. Acad. Nat. Sc. 1859, 87,..... Or.
gibbicolle *Lec.*, ibid. 284,.....Cal.
quadrulum *Lec.*, ibid. 87,.....Or.
punctulatum *Lec.*, ibid. 284,.....Cal.
cornutum *Lec.*, ibid. 87.....Cal.
pudicum *Boh.*, Eugen. Resa, 86,.....'Cal.

DORCATOMA Herbst.

affine *Boh.*, Eugen. Resa, 87,.....'Cal.

TENEBRIONIDÆ.

ELEODES Esch.

grandicollis *Mann.*,.....Cal.
valida Boh., Eugen. Resa, 90.
scabricula *Lec.*, Pr. Acad. Nat. Sci. 1859, 187,.....Cal.
constricta *Lec.*, ibid. 187,.....Cal.
subaspera *Solier*, St. Ent. 246,.....'Cal.
impressicollis *Boh.*, Eug. Resa, 90,.....'Cal.
This is either E. planata or E. scabrosa.

SCOTOBÆNUS Lec.

parallelus *Lec.*, Pr. Acad. Nat. Sci. 1859, 88,.....Cal.

HELOPS Fabr.

opacus *Lec.*, Pr. Acad. Nat. Sci. 1859, 284,.....Cal.

XYSTROPUS Sol.

opacus *Lec.*, Pr. Acad. Nat. Sci. 1859, 78,.....Cal.

PYTHIDÆ.

RHINOSIMUS Latr.

pallipes.....'Cal.
Rhinomacer pallipes Boh. (err. typ.) Eugen. Resa, 112.

SALPINGUS Gyll.

alternatus *Lec.*, Pr. Acad. Nat. Sci. 1859, 285,.....Cal.

MELANDRYADÆ.

PHRYGANOPHILUS Sahlb.

collaris *Lec.*, Pr. Acad. Nat. Sci. 1859, 88,.....Or.

HYPULUS Payk.

fulminans *Lec.*, Pr. Acad. Nat. Sci. 1859, 284,.....Or.
? *Dircæa Holmbergii* Mann.

MORDELLONES.

ANASPIS Latr.

nigriceps *Lec.*, Pr. Acad. Nat. Sci. 1859, 88,.....Or.

ANTHICIDÆ.

NOTOXUS Geoffr.

sparsus *Lec.*, Pr. Acad. Nat. Sci. 1859, 284,.....Cal.

ANTHICUS Fabr.

cæsiosignatus *Boh.*, Eugen. Resa, 104,.....'Cal. (Puna.)
troglodytes *Boh.*, ibid. 105,.....'Cal. (Tahiti.)
nitidus *Boh.*, ibid. 105,.....'Cal.
atomarius *Boh.*, ibid. 106,.....'Cal.
amplicollis *Boh.*, ibid. 106,.....'Cal.

CURCULIONIDÆ.

BRUCHUS Linn.

ramicornis *Boh.*, Eugen. Resa, 112,.....'Cal.

COSSONUS Clairv.

scrobiculatus *Lec.*, Pr. Acad. Nat. Sci. 1859, 285,....Cal.

*I now recognise this genus as related to Phengodes.

HYLESINUS Fabr.

nebulosus *Lec.*, Pr. Acad. Nat. Sci. 1859, 285,.....Cal.

CERAMBYCIDÆ.

CALLIDIUM Fabr.

infuscatum *Lec.*, Pr. Acad. Nat. Sci. 1859, 285,.....Cal.

ERGATES Serv.

spiculatus *Lec.*,.....Or. Cal.
Macrotoma californica White, B. Mus. Cat. Long. 37 (♂).
Macrotoma spiculigera White, ibid. 39 (♀).

ELAPHIDION Serv.

procerum *Lec.*, Pr. Acad. Nat. Sci. 1859, 88,.. .....Or

BROTHYLUS Lec.

conspersus *Lec.*, Pr. Acad. Nat. Sci. 1859, 285,.....Or.

LEPTURA Linn.

xanthogaster *Lec.*, Pr. Acad. Nat. Sci. 1859, 88,.....Or.
quadrillum *Lec.*, ibid. 88,.....Or.
lætifica *Lec.*, ibid. 89,..... Or.
sanguinea *Lec.*, ibid. 89,.....Or.
dehiscens *Lec.*, ibid. 89,.....Or.
lugens *Lec.*, ibid. 89,.....Or.

DORCADION Dalman.

Lorquinii *Fairemaire*, Ann. Ent. Fr. 3d, 3, 322,.....Cal.

CHRYSOMELINÆ.

SYNETA Esch.

suturalis *Lec.*, Pr. Acad. Nat. Sci. 1859, 89,.....Or.
æriata *Lec.*, ibid. 90,.....Cal.

GLYPTOSCELIS Lec.

albidus *Lec.*, Pr. Acad. Nat. Sci. 1859, 81,..... ...Cal.

CHRYSOMELA Linn.

elegans *Oliv.*,..... .....Or.
sigmoidea *Lec.*, Pr. Acad. Nat. Sci. 1859, 286,.....Or.

HALTICA Illiger.

æruginosa *Lec.*, Pr. Acad. Nat. Sci. 1859, 285,.....Cal.
evicta *Lec.*, ibid. 286, ...Cal.
tincta *Lec.*, ibid. 286,..... ..Cal.

DIBOLIA Latr.

ovata *Lec.*, Pr. Acad. Nat. Sci. 1859, 286,.....Cal.

LUPERUS Geoffr.

smaragdinus *Lec.*, Pr. Acad. Nat. Sci. 1859, 286,2...Cal.

GALLERUCA Geoffr.

angularis *Lec.*, Pr. Acad. Nat. Sci. 1859, 90,.....Cal.

ANOPLITIS Kirby.

quadrata *Lec.*, ...Cal.
Hispa quadrata Fabr.

COCCINELLIDÆ.

COCINELLA.

lacustris *Lec.*, Pr. Acad. Nat. Sci. 6, 131,.....Or.
melanopleura *Lec.*, Pr. Acad. Nat. Sci. 1859,. 286,....Cal.
barda *Lec.*, ibid. 286,..... .....Cal.

CHILOCHORUS Leach.

pleuralis *Lec.*, Pr. Acad. Nat. Sci. 1859, 90,.....Cal.

NOTE. The tables upon page 5 have, by the progress of collections and the advance of investigation, become incorrect, and I therefore replace them by others which contain the results of the most recent observations.

TABLE I. *Genera common to the Eastern and Western Continents.*

NAMES OF FAMILIES.	*Total number of genera.*	RUSSIAN AMERICA.		OREGON.		CALIFORNIA.	
		In Atlantic States.	3 3 5	*In Atlantic States.*		*In Atlantic States.*	
Adephaga,	48	27		27	2	36+2 ?[1]	1
Silphales,	11	8		2	1	3	1
Staphylinidæ,	42	25		Not collected.		30	
Scarabæidæ,	10	2		5		8+1[2]	
Elateridæ,	12	5		11		9	
Tenebrionidæ,	6	1		3		4	1
Cerambycidæ,	17	11	1	13	2	10	2
Chrysomelidæ,	16	6		10	1	13	1

[1] Calleida, Patrobus. [2] Sinodendron.

The genera of the above table, which have not been found in the Atlantic States, are :

In Russian America.—Miscodera, Leistus, Trachypachys, Necrophilus, Sphærites, Pteroloma, Bolitochara, Syntomium, Phlœonæus, Arpedium, Deliphrum, Rosalia (Pelophila has been united with Nebria by Schaum, and Lyrosoma with Pteroloma by Lacordaire.)

In Oregon.—Callisthenes (occurs in the central regions, east of the Rocky Mountains), Trachypachys. Necrophilus, Ergates ?, Rosalia, Timarcha.

In California.—Anillus, Necrophilus, Calcar, Ergates ?, Mesosa, Timarcha.

TABLE II. *Genera peculiar to America.*

NAMES OF FAMILIES.	*Total number of genera.*	RUSSIAN AMERICA.			OREGON.			CALIFORNIA.		
		In Atlantic States.	*Not in Atlantic States.*		*In Atlantic States.*	*Not in Atlantic States.*		*In Atlantic States.*	*Not in Atlantic States.*	
			A.	B.		A.	B.		A.	B.
Adephaga.	17				1		3[3]	6+1?		7
Staphylinidæ,	2			1+1?	Not col.	Not col.				1
Scarabæidæ,	7				4			5		2
Elateridæ,	7	1			2			3		1
Tenebrionidæ,	20			1	2	2	1	2	4[3]	13
Cerambycidæ,	8			2	2		4	1		1?[4]
Chrysomelidæ,	4				2			4		

[3]Triorophus, Eurymetopon, Eleodes, Coniontis. [4]Oenemona ?

The columns headed A contain genera found in the central desert regions of Kansas, New Mexico and Texas, but which do not extend into the Atlantic region proper. Those headed B contain the genera peculiar to the Pacific slope. The genera found in the Atlantic States are:

In Russian America.—Epiphanis.

In Oregon.—Haplochile, Ligyrus, Diplotaxis, Dichelonycha, Canthon, Alaus, Asaphes, Nosoderma, Blapstinus, Desmocerus, Tetraopes, Saxinis, Microrhopala.

In California.—Diaphorus, Thalpius, Lachnophorus, Casnonia, Axinopalpus, Pasimachus ? Agonoderus, Ligyrus, Cremastochilus, Diplotaxis, Dichelonycha, Canthon, Perothops, Monocrepidius, Melanactes, Nosoderma, Blapstinus, Tetraopes, Chlamys, Saxinis, Diabrotica, Microrhopala.

No. 2.

REPORT UPON THE MAMMALS COLLECTED ON THE SURVEY.

CHAPTER I.

REPORT BY J. G. COOPER, M. D.

NEOSOREX NAVIGATOR, Cooper.

BAIRD, Gen. Rep. Mammals, 1857, 11.

SP. CH.—Fur much longer than the ears. Palms and soles margined by a fringe of bristles. Hind feet nearly as long as the skull. Tail one-half longer than head and body. Color above, dark sooty brown, mixed with hoary; beneath, greyish white; tail silvery white beneath. Head and body 2.10; tail 3.

But one specimen of this species was obtained during the expedition; this, according to the label now attached, was found at Fort Vancouver, but I am inclined to consider this a mistake, and that it was really taken while swimming under water in a lake near the summit of the Cascade mountains, August 31, 1853.

SOREX VAGRANS, Cooper.

BAIRD, Gen. Rep. Mammals, 1857, 15.

SP. CH.—Third upper lateral tooth smaller than the fourth. Above, olive brown, washed with hoary; beneath, dusky yellowish white; sides a little paler than the back. Head and body 2 inches; tail 1.75. Hind foot about .47 of an inch.

Specimens were obtained at Shoalwater Bay, W. T.

SCALOPS TOWNSENDII, Bach.

Oregon Mole.

Scalops townsendii, BACH. J. A. N. S. Ph. VIII, 1839, 58.
AUD. & BACH. N. A. Quad. III, 1853, 217; pl. cxlv.
BAIRD, Gen. Rep. Mammals, 1857, 65.

SP. CH.—Teeth 44. Eye small, but not covered by the integument. Tail rather scantily haired. Nostrils opening on the upper surface of the tip of the snout. Palm large and broad. Color nearly black, with faint purplish or sooty brown reflection. (Sometimes, perhaps, glossed with silvery?)

Moles are not common in any part of the Territory I have visited. Two specimens were obtained at Shoalwater Bay, where they burrow more like the gophers than the *S. aquaticus*, throwing up little mounds at a yard or two apart, though they sometimes in soft ground formed continuous galleries just beneath the surface.

FELIS CONCOLOR, L.

American Panther.

BAIRD, Gen. Rep. Mammals, 1857, 83.

The *cougar*, incorrectly called panther, and American or California lion. This ferocious and blood-thirsty animal is very common in the Territory, where numbers are killed every year. It is more dreaded for its depredations on stock, however, than for a disposition to attack man, of which I never heard of an instance unless when it was wounded or in defence of its young. The Indians have a great fear of it, partly, no doubt, mixed with the superstitions which influence them so much. But in California, where it is abundant and grows to a great size, the hunters agree that it will always "vamose" when met with, while, if a hunter suddenly meets a "grizzly," he considers it the "better part of valor" to "vamose" himself. I prepared a skin and skull of a young male cougar that was killed in February, 1854, at the "Cascades" of the Columbia. It had stolen a large hog, and when pursued and shot at several times, finally leaped on to a high stump, whence a rifle ball through the forehead soon brought it down. It being the rainy season, and no means at hand of drying the skin artificially, it was unfortunately spoiled. This one measured 7 feet 4 inches from nose to tip of tail, the tail itself being 2 feet 7 inches long. Height at fore shoulder 3 feet. Many have been reported in the papers as measuring from 9 to 11 feet in total length. The old idea that no feline animal will voluntarily take to the water, though now contradicted by many proofs, is still prevalent. In this animal we have an instance to the contrary. A steamboat descending the Columbia river met with one swimming across where the river was at least a mile and a half wide, and without difficulty the men succeeded in capturing it by means of noose thrown over it. It was sent to California, where I saw it exhibited in December, 1855. It was then full grown, very fat, and with beautiful glassy fur of a rich brown color. A few of the black stripes, more marked in southern specimens, could be seen along the sides and legs where the white of the under parts joined the brown. It was restless and playful, but with that treachery characteristic of the race in every movement. Its keeper ruled it with a rod of iron, to which it always showed strong objections by growling, spitting, and obstinately refusing to obey his commands as long as it dared to resist.

Though thought to be common in many places where I have hunted, I never had the satisfaction of meeting with one in its native wilderness or even of hearing its terrible scream.

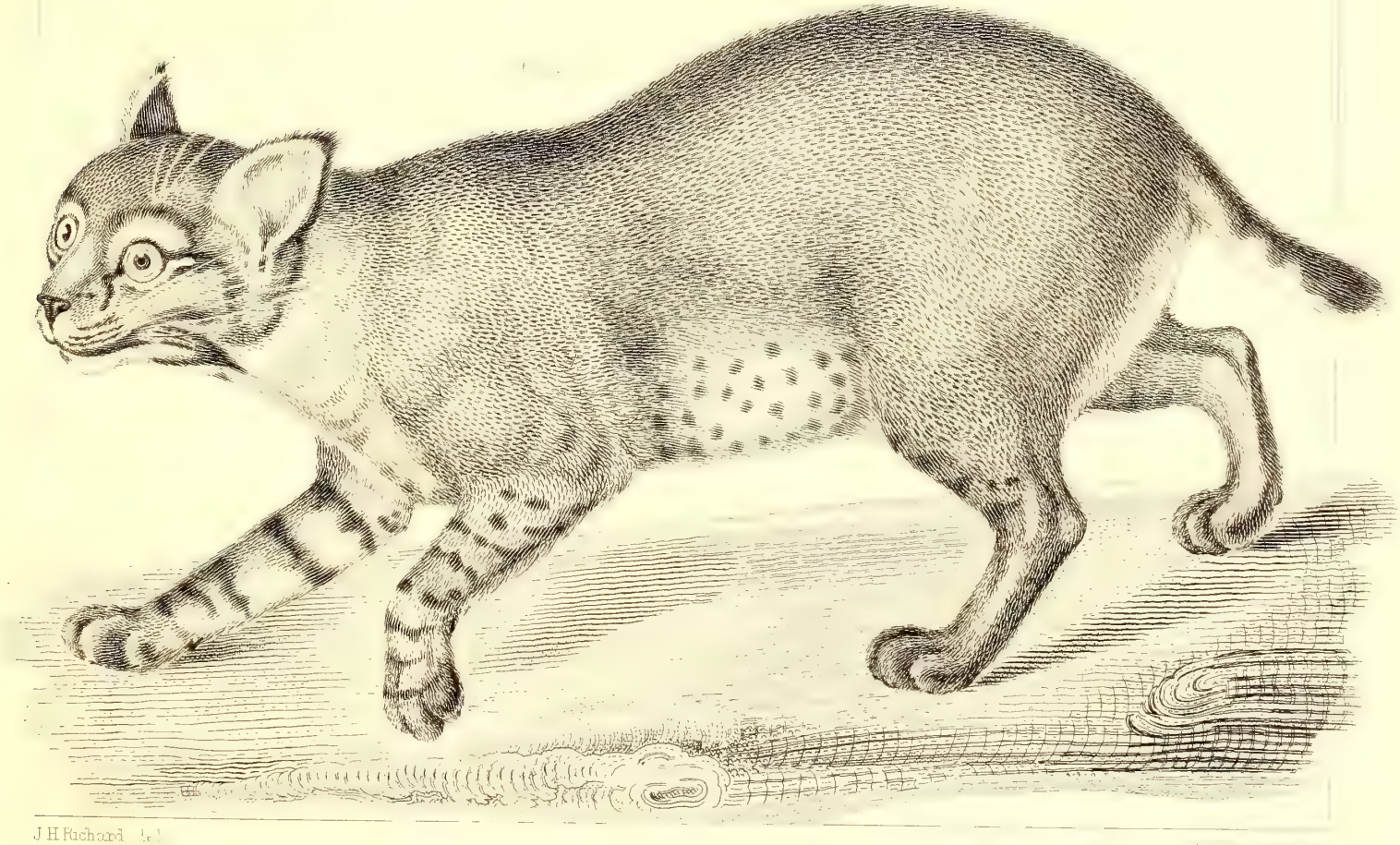
LYNX FASCIATUS, Raf.

Red Cat.

Lynx fasciatus, RAF. Am. Month. Mag. II, Nov. 1817, 46.
BAIRD, Gen. Rep. Mammals, 1857, 96.
Tiger cat, LEWIS & CLARK, Travels, II, 1814, 167.

SP. CH.—Fur very soft and full. Ears pencilled. Color, rich chestnut brown on the back, a little paler on the sides and on the throat. A dorsal darker collar on throat, as dark as the sides. Region along central line of belly (rather narrow one) dull whitish, with dusky spots extending to lower part of sides. No spots or bands discernible on the upper part of sides. Ears black inside, with a very inconspicuous patch of grayish. Terminal third of tail above, black.

The tiger cat of Lewis and Clark is very abundant in the forests of Washington Territory. The numbers that will resort to a farm yard, in a retired situation, for prey, is wonderful. One man told me that he had killed at his place, during one season, no less than fifteen, a large herd of young pigs being the attraction. His dog, but little larger than the wild cats, would boldly attack them, and though sometimes severely scratched, always came off victor. All that I have seen were very thin, so that they probably do not find much food in their forest



J.H.Fuchsard del.

haunts, where the blue grouse must be the largest game they can capture. In the fall they, no doubt, feast, like many other animals, on the multitudes of dead salmon washed up on river banks.

I only once saw one alive, which was walking along a fallen trunk of a tree, whose top lay in the water, trying to get at a flock of half-fledged sheldrakes. It was so intent on the game that it did not notice our canoe silently and rapidly approaching it. The Indian in the bow startled it from its pursuit by lodging a charge of buck-shot in its side. It fell into the water, but soon recovered and attempted to climb out again. A stroke of a paddle stunned it, but it was sometime before it died, showing great tenacity of life.

While travelling on the Columbia, I have heard in the densely forest clad mountains near its mouth, a loud screaming, answered from the hills around, which I was told was caused by the wild cat. This was always before sunrise, and the number was too great to have been caused by panthers.

LYNX RUFUS.

American Wild Cat.

Felis ruffa, Guldenstaedt, Nov. Comm. Petrop. XX, 1776, 499.
Baird, Gen. Rep. Mammals, 1857, 90.
Lynx rufus, Raf. Am. Month. Mag. II, 1817, 46.
Aud. & Bach. N. A. Quad. I, 1849, 2; pl. i.

Sp. Ch.—Fur moderately full and soft. Above and on sides pale rufous, overlaid with grayish; the latter color most prevalent in winter. A few obsolete dark spots on the sides, and indistinct longitudinal lines along the middle of the back. Collar on the throat like sides, but much paler. Beneath, white spotted. Inside of fore and hind legs banded. Tail with a small black patch above at the end, with indistinct subterminal half rings. Inner surface of the ear black, with a white patch.

In California the wild cat is no less numerous than in Washington Territory. During a stay of six weeks in that country, in the fall of 1855, I saw two, and heard of many others being killed. The country being more open, they are much more easily hunted than in the north, and often appear in the open prairie in the day time. One I met with while hunting hares, about noon, and where I had been shooting several times the same morning. Two of us tried to steal upon it from opposite sides, but, as there was no shelter, it saw us and galloped off rapidly to a dense thicket near by. The same day, having obtained dogs, it was "treed" and shot. Many had been already killed near by as they came down from the wild mountains to the farm. They often sat in some thicket convenient to the house, and during the day succeeded in catching many fowls that unwarily approached their lair, as the occasional screaming and confusion among the poultry testified. When the owner had dogs, there was generally no difficulty in driving the cat up a tree, and there shooting it.

CANIS OCCIDENTALIS.

Large Wolf.

Baird, Gen. Rep. Mammals, 1857, 104.

One or more species of wolf is found west of the Cascade mountains, but I could never obtain a specimen. They are of very large size, and howl in a loud dismal tone, very different from the yelping bark of the "coyote," which I never heard in the forest covered regions. They are said to be of a light gray color, and instances are related of their pursuing and devouring men, especially in cold winters. It seems strange that while two or three species of wolves, besides foxes, are very abundant in the prairies and deserts east of the Dalles, where there is no game larger than hares and sage fowl, they seem to shun the regions inhabited by elk and deer west of the mountains. They have, however, become more common since the introduction of sheep in some districts.

? VULPES MACROURUS, Baird.

Red Fox.

BAIRD, Gen. Rep. Mammals, 1857, 130.

The same remarks apply to foxes as to wolves, respecting their range. I never saw even the skin of one killed west of the Cascade Range, though they are undoubtedly found in small numbers. The great difficulty of hunting such animals in the dense forests is one reason, and the general substitution of strychnine for traps another why their skins are less often seen, many being needlessly afraid to skin an animal killed by strychnine.

MUSTELA PENNANTII, Erxl.

Fisher.

BAIRD, Gen. Rep. Mammals, 1857, 149.

"Fisher" skins are brought by the Indians from the mountains. They do not, however, seem to be common, and of their habits or distribution I have obtained no information.

?? MUSTELA AMERICANA, Turton.

Sable.

While on the Cascade mountains I saw among the Indians a few skins of the size of that of the ermine, but without the black tip to their tail and of a cream yellow color. They were used as ornaments, and in trade, and valued very highly. They were said to be obtained only on the mountains.

LUTRA CALIFORNIA, Gray.

California Otter.

BAIRD, Gen. Rep. Mammals, 1857, 187.

The otter is abundant in every stream in the Territory, numbers living even at Cape Disappointment at the junction of the salt with the fresh water, where they have formed paths leading up the almost perpendicular rock to the dense thickets above, and quite inaccessible to the hunter. Though I have often watched for them, I never saw one, so nocturnal and cautious are they in their habits.

ENHYDRA MARINA, Fleming.

Sea Otter.

BAIRD, Gen. Rep. Mammals, 1857, 189.

The sea otter is not found near the mouth of the Columbia river, as it prefers rocky coasts and islands. From the "Quinailt," a small river emptying about 50 miles north, to Cape Flattery, numbers of skins are brought, for which the Indians, obtain an extravagant price—in goods, often as much as $30 to $40.

MEPHITIS OCCIDENTALIS, Baird.

California Skunk.

? *Mephitis mesomelas*, ST. HILAIRE, Voy. de la Venus, Zoologie, I, 1855, 133; plate.
Mephitis occidentalis, BAIRD, Gen. Rep. Mammals, 1857, 194.

SP. CH.—Size of a cat. Tail vertebræ two-thirds the length of head and body. Bony palate with small narrow emargination in the middle of its posterior edge. Color black, with a white nuchal patch, bifurcating behind and reaching to the tail, which is entirely black.

Skunks are very common in the country west of the Cascade mountains, frequenting the borders of woods and settlements. I have often seen them both alive and dead, and all appeared to be of the common eastern species. The commonest markings were black, with a narrow white stripe running back from each shoulder. To show the persistence of the smell, I will mention that wishing to obtain a skull, I took a stick and tried to separate it from what was then only a mass of fur and bones, the animal having been dead about a year, but such an overpowering odor arose that I was glad to retreat without the specimen. I afterwards got one in California, where, being exposed to the sun, the scent had almost entirely left the dried carcass.

MEPHITIS BICOLOR.

Little Striped Skunk.

Mephitis bicolor, J. E. Gray, Charlesworth's Mag. N. H. I, 1837, 581.
Baird, Gen. Rep. Mammals, 1857, 197.
Mephitis zorilla, Lichtenstein, Ueber Mephitis, Abh. Akad. Wiss. Berlin, for 1836, (1838,) 281; tab. ii, f. 2.
Aud. & Bach N. Am. Quad. III., 1854, 276, (not figured.)

Sp. Ch.—Smallest of North American species. Tail vertebræ, less than half the body; with the hairs not much more than half. Black, with broad white patch on forehead, and crescent before each ear; four parallel dorsal stripes interrupted and broken behind; a shorter siripe on side of belly, running tnto a posterior transverse crescent, which are all white. Tail black throughout, to base of hairs, except a pure white pencil at the end.

This little skunk is abundant in Santa Clara valley, south of San Francisco. They are commonly known by the name of pole cat, to distinguish them from the larger species of skunk. The peculiar smell seems somewhat less strong than in that species, but in habits they much resemble it, being very destructive to poultry and eggs, which their smaller size enables them to get at easily by entering the buildings at night. As an offset to this mischief they probably do much good by destroying the still more destructive "ground squirrels" of California, as I attempted to prove to the farmers. They are exactly suited in size for pursuing the squirrels into their holes, though I never heard that they had been seen doing so. Being nocturnal and able to see in the dark, they can take them also at a disadvantage—while they are asleep.

The one I obtained I poisoned with strychnine placed on meat in a hen house, which they were in the habit of frequenting nightly. They also often came to a butcher's shop to steal meat and feed on the offal thrown away from it. The eyeballs are excessively prominent, and shine after death with a fiery glare. The pupil is circular, and was much dilated, probably by the strychnine—length 5½ inches; tail 4; iris black; nose flesh color.

TAXIDEA AMERICANA, Waterh.

Badger.

Baird, Gen. Rep. Mammals, 1857, 202.

The American badger is very abundant in the plain country east of the Cascade mountains, its burrows perforating the ground thickly in many places to the great danger of both horses and riders. Yet our party never met with but two badgers by daylight, one of which I obtained. This, by the recommendation of some of the hunters, was cooked, but though some could eat it, the strong "doggy" flavor disgusted me, not to mention its extraordinary toughness and leanness. It is unknown west of the Cascade mountains, though in California a species is said to be found.

PROCYON HERNANDEZII, Wagler.

Black Footed Raccoon.

BAIRD, Gen. Rep. Mammals, 1857, 212.

The raccoon is not an abundant animal in any part of the Territory. I have but rarely seen their peculiar foot tracks in the mud, and never saw the animal itself in the woods. The skins are not often seen among the Indians. I had, however, an opportunity of observing a tame one at Portland, Oregon, which, as well as one I afterwards saw in California, had precisely the same habits, impatient cry, and sagacious inquisitiveness, as one which I once kept for many months, and allowed to have perfect liberty. The colors, size, and proportions also showed no appreciable differences.

Though this animal has a reputed fondness for oysters, I never saw any signs of its visiting the extensive beds at Shoalwater bay, though it sometimes walked along the banks of creeks emptying into the bay.

URSUS AMERICANUS, Pallas.

Black Bear.

BAIRD, Gen. Rep. Mammals, 1857, 225.

The common black bear of the United States is quite abundant in the wooded portions of the Territory, where it is found varying much in color, from which circumstance some authors have supposed that there was more than one species; I knew, however, of an instance of a black female being killed with a number of cubs, all differing in color. One of them, which I saw, was of a light yellowish hue. The color, then, does not even indicate a different race, as it varies in the young of one litter.

I have seen bears at a distance, but never got near one, which it is almost impossible to do without dogs, in the dense forests and thickets that they frequent. It is said that before lying down they always walk some distance with the wind, so that anything following their track must necessarily approach to windward and thus give them a chance to escape. From the abundance of "signs" in almost every thicket, and the quantities of berries devoured by them, they seem to be extremely common, and their food must be almost entirely vegetable. I have seen in low springy grounds a kind of "skunk cabbage" torn up by them and the leaf stalks devoured. They sometimes also take pigs and other small stock from the farmer, and devour the dead salmon on river banks in spring and fall. They are almost always fat, unlike their more carnivorous relatives. Several different shrubs are called "Bear berry"* and "Bear wood," from their fondness for the fruit, which is, I believe, in every instance uneatable by man.

URSUS HORIBILIS, Ord.

Grizzly Bear.

BAIRD, Gen. Rep. Mammals, 1857, 219.

The "Grizzly" is not found in the western wooded regions, nor, I believe, anywhere west of the Rocky mountains in this Territory.

PHOCA.

Seal.

Seals frequent the bays and rivers of the Territory in great numbers, ascending the Columbia

* *Arbutus Uva-Ursi; Xylosteum involucratum; Rhamnus Purshianus.*

to the Dalles, and the smaller streams almost to their heads, probably in pursuit of salmon. As they always sink, when shot in deep water, I never obtained a specimen. Many are killed by the settlers for their oil, and the Indians sometimes have a hunt for them, killing them while asleep on sand bars in the bays, but I never was present on one of these occasions in time to secure a skin, as they roast the animal with its skin on.

SCIURUS RICHARDSONII, Bach.

Richardson's Squirrel.

Sciurus richardsonii, Bachman, Pr. Zool. Soc. Lond. VI, 1838, 100.
Aud. & Bach. N. Am. Quad. I, 1849, 41.
Baird, Gen. Rep. Mammals, 1857, 273.

Sp. Ch.—Size larger than the Hudson's Bay squirrel. Ears with long hairs, presenting the appearance of tufts. Tail shorter than the body. Under surface of feet hairy from heel to metatarsals; then nearly naked. Above, reddish brown, varied with annulations of black, lighter on the sides; beneath, dull white; a dark line separating colors of sides from belly. Tail bushy, sub-cylindrical, dark reddish brown in the centre, entirely of a pure glossy black at tip. The hairs all long and coarse. Hairs on the tail generally, (except at tip,) glossy black beyond the rufous portion, and more or less tipped with paler rusty.

One specimen of this species (No. 10) was obtained on the Spokane river, October 30, 1853.

SCIURUS DOUGLASSII, Bach.

Oregon Red Squirrel.

Sciurus douglassii, ("Gray,")[1] Bachman, Pr. Zool. Soc. Lond. VI, 1838, 99.
("Bach.") Aud. & Bach. N. Am. Quad. I, 1849, 370; pl. xlviii.
Baird, Gen. Rep. Mammals, 1857, 275.
Sciurus belcheri, J. E. Gray, Ann. & Mag. N. H X, 1842, 263.—Ib. Zoology of the Sulphur, 1844, 33; pl. xii, fig. 2.
Sciurus suckleyi, Baird, Proc. Acad. Nat. Sc. Phila. VII, April, 1855, 333.

Size that of *Sciurus hudsonius*, or a little larger. Ears well tufted; tail shorter than the body, scarcely flattened. Soles naked in the centre. Above dull rusty, and black, mixed; the latter quite predominant; beneath, clear bright buff, without mixture of dark or annulated hairs. A dark stripe on the sides. Tail dull chestnut centrally, darker above; then black and margined all round with rusty white. Hairs at tip of tail entirely black, except at their extremity.

More northern specimens in winter have the soles densely hairy to the toes, the fur much fuller and softer, the under parts with dusky annulations, the general hue grayer. Size about that of *S. hudsonius*, or a little larger. Head short, broad. Whiskers longer than the head; black. Thumb, a mere callosity; fingers well developed, the central two longest, and nearly equal; the inner rather longer than the outer; claws large, compressed, and much curved; palms naked. On the hind feet the inner toe is shortest, reaching only to the base of the claw of the outer, which comes next in size; the fourth is longest, the third and second little shorter. Claws all large and much curved. In summer the soles are naked, except along the edges and the extreme heel; in other words, there is a narrow central line of naked skin from near the heel; they are more hairy in winter. The ears are moderate, with short close hairs on their concavity; the back of the ear is covered with long hairs, those near the upper margin longest, and projecting beyond nearly five lines in some specimens; these tufts are nearly black. The tail is small, shorter than the body, moderately flattened; the hairs rather short, and, as on the rest of the body, coarse and stiff.

The little Pine Squirrel I found quite abundant in all the wooded parts of the Territory on both sides of the Cascade mountains, and obtained specimens from very distant localities which seemed to agree closely in habits, cries, and colors. They have the same loud and petulant chatter as the eastern species, and descend, fearlessly, to within a few feet of every intruder, scolding and showing their anger in various ways. In the mild climate, west of the Cascade mountains, they do not hybernate, but as they are found also on the summits of these mountains, they probably there retire for winter, to hollow trees, and live on their hoarded stock of provisions.

In summer they inhabit nests of leaves and sticks built among branches and vines. They do not seem to be troublesome to the farmer, as they live on the pine nuts, acorns and hazel nuts abundant in the woods. Probably if Indian corn was a common crop they would not be long in discovering its valuable properties.

The only difference in the color of the male and female seems to be a deeper hue of the orange colored under parts of the latter.

Length from nose to tip of tail, 14 inches.

PTEROMYS OREGONENSIS, Bach.

Columbia River Flying Squirrel.

Pteromys oregonensis, Bachman, Jour. Acad. Nat. Sc. Phila. VIII, 1839, 101.—Ib. in Townsend's Narrative, 1839.
Aud. & Bach. N. Am. Quod. I, 1849, 133; plate x
Baird, Gen. Rep. Mammals, 1857, 290.

Sp. Ch.—Much larger than *Pteromys volucella*. Tail, with hairs, longer than the body alone; shorter than head and body. Flying membrane very broad, its antero-external corner exhibiting a conspicuous angle. Color above yellowish brown, beneath dull white; the hairs plumbeous at base. Tail becoming more plumbeous towards the tip. Length, 7 inches; tail with hairs, $6\frac{1}{4}$; hind foot, $1\frac{1}{2}$ inches.

The only specimens I ever saw were obtained in August, near the foot of Mount St. Helens. In turning over a log, a nest was found under it containing four young, still blind. The mother in attempting to escape was killed by a pistol ball, and was lost before I could see it. It was much larger than the *P. volucella* of the eastern States. I never heard of one having been seen in the country nearer the coast, and think it is confined to the mountains.

TAMIAS TOWNSENDII.

Townsend's Striped Squirrel.

Tamias townsendii, Bachman, Jour. Phila. Acad. Nat. Sc. Phila. VIII, 1, 1839, 68.—Ib. in Townsend's Narrative, 1839, 321.
Aud. & Bach. N. Am. Quad. I, 1849, 159; pl. xx.
Baird, Gen. Rep. Mammals, 1857, 301.
Tamias cooperii, Baird, Pr. Ac. Nat. Sc. Phila. VII, April, 1855, 334.

Sp. Ch —Larger than *T. striatus*. Tail, with hairs, nearly or quite as long as the body. Sides of head striped. Above and on the sides rufous brown, with five dark stripes reaching to the tail, the intervals between which are scarcely or but seldom paler than the ground color; beneath, dull white. Ears dusky brown, hoary posteriorly. Tail bright chestnut beneath, margined with ashy white, within which is a band of black. Length 5 to 6 inches. Hind foot 1.40 to 1.50.

Varies in rather paler colors, ash-colored interspaces, and sometimes the back with black hairs interspersed, so as to obscure or nearly conceal the dorsal stripes

The ground squirrel, or "chipmunk," inhabiting the neighborhood of the coast in Washington Territory, resembles closely in its habits that common on the Atlantic border. It differs, however, considerably in colors, and has not the shrill cry of the eastern species. About the first of April it emerges from its winter nest and soon after great numbers are seen where none appeared before. In summer they will often sit on some prominent stump or rock, and make a shrill barking noise for hours together, answering each other from distant parts of the woods. They become very mischievous in the garden, being especially fond of peas either green or ripe, for which they will come from their burrows several rods distant, as I have observed from the scattered pea-vines growing along the path where they have dropped the seed from their overloaded cheek-pouches. In November they retire to their burrows to sleep through the long rainy season, though it is probable that in the warm weather, often occurring in the winter of this coast, they come out to breathe the fresh air from time to time.

The ground squirrels obtained on the summit of the Cascade mountains differ in some respects from those near the coast. As I observed these animals in abundance in all the wooded regions, and saw no marked differences in their appearance or habits, I supposed all to be of one species, varying slightly in size and colors from differences of climate, which, between the perpetual

Fig. 1

Fig. 2

spring of the western regions and the edges of perpetual snow on the mountains, would be equal to many degrees of latitude on the eastern coast, and judging from analogous facts should have an influence on these characters. Their principal food on the eastern slopes of the Cascade mountains was the pine nut, and during September I observed them very busy extracting these from the still hanging cones, ascending the trees to a considerable height, though at other times they rarely leave the ground. I find it stated in my notes that they had there a similar shrill cry to that of the eastern species.

Specimens from Shoalwater bay measure: male, head and body, 5½ inches; tail, 4 to 5 inches; head, 1½; ear, ⅜—⅝. From Steilacoom, Puget's Island: male, 5½; tail, 4½; fore leg 2½; hind leg, 3 inches. Female, 6; tail, 4; fore leg, 3; hind leg, 3½ inches.

SPERMOPHILUS BEECHEYI.

California Ground Squirrel.

Arctomys (*Spermophilus*) *beecheyi*, Richardson, Fauna Boreali-Americana, I, 1829, 170; plate xii, B.
Spermophilus beeche , F. Cuvier, Suppl. Buffon, I, Mamm. 1831, 331.
Baird, Pr. A. N. Sc. Phil. VII, 1855, 334.—Ib. Gen. Rep. Mammals, 1857, 307.

Sp. Ch.—Size of the cat squirrel, *S. cinereus*. Ears large, prominent. Tail more than two-thirds as long as the body. Above mixed black, yellowish brown, and brown in indistinct mottlings; beneath, pale yellowish brown, Sides of head and neck, hoary yellowish, more or less lined with black, a more distinct stripe of the same, from behind the ears on each side, extending above the shoulders to the middle of the body. Ears black on their inner face. Dorsal space between the stripes scarcely darker than the rest of the back. Length, 9 to 11 inches; tail, with hairs, 7 to 9. Hind feet, 2 to 2.30 inches.

The marmot squirrel, called ground squirrel in Santa Clara valley, is found in incredible numbers in all the level or low land southward from San Francisco bay. It is one of the greatest pests to the farmer, destroying immense quantities of grain, and in spite of poisoning, drowning-out, shooting, and trapping, seems rather to increase than diminish in numbers. In travelling along the public road in a stage coach they are to be seen on every side, sitting boldly at the mouth of their burrow as the vehicle passes within a few yards, as if defying danger, those furthest off raised on their hind legs to have a better view, and looking like short gray stumps, so motionless do they sit.

If one is fired at it disappears as if by magic, and even if you are fortunate enough to shoot it at a distance from any burrow, it will spend its last breath in the attempt to reach one, so that unless its head is shot off by a rifle ball, the chance of getting it is very small. But they may often be recovered by feeling for them with the ramrod when dead near the mouth of the burrow.

They are very fine eating, and formerly sold well in San Francisco market, but since strychnine has been used to kill them, no one will buy them for fear of being poisoned.

When startled and about to run into their burrow, they make a shrill screaming cry, somewhat like that of our eastern striped squirrel, when frightened.

It is said that these animals will often destroy 30 or 40 acres of wheat in a field, cutting off the heads and leaving none behind in their progress. Magazines of theirs are found in digging wells, thirty feet below the surface, and from the large pile of earth thrown out at the mouth of their burrows they must be very extensive. There are commonly two or three entrances near together, which probably communicate, and in many places these holes occur every few yards, so that there may be several hundred in an acre, and many appear to inhabit one burrow.

They are very hard to drive away from their homes, remaining in the fenced gardens and about houses until they are killed. Being entirely diurnal in habits, and appearing most abundantly in the hottest part of the day, they are exposed to many enemies besides man, and

it is wonderful how they continue so numerous. Except in the very lowest ground, overflowed by tides, there is no part of Santa Clara valley where they cannot be seen at any time, scampering over the ground and watching at their burrows. Where it is practicable, the farmers combine in the commencement of the rainy season and build dams in the water courses, so as to overflow the land and drown out the squirrels.

Length 10 inches; tail 7 inches.

SPERMOPHILUS LATERALIS, Rich.

Say's Striped Squirrel.

BAIRD, Gen. Rep. Mammals, 1857, 312.

I shot a single specimen of a striped squirrel, near the eastern base of Mount Adams, in August, 1853, where it was in company with the common *Tamias*, which swarms in those pine forests. Its large size and something peculiar in its general appearance induced me to shoot it, and I have now no doubt that it was this animal. I unfortunately lost the specimen, and did not meet with another. It was excessively fat.

APLODONTIA LEPORINA, Rich.

Sewellel.

BAIRD, Gen. Rep. Mammals, 1857, 353.

The "Sewellel" of Lewis & Clark, appears to be an abundant animal in some districts west of the Cascade mountains, but from various causes I never could obtain a specimen. At the time of their visit to the country the Indians used the skins as clothing, and as it required a large number of skins to make an ordinary sized blanket, the numbers of the animals caught must have been great. It was caught by stone fall-traps, but with what bait I do not know, probably some root. The Indians assured me that none were found nearer to the coast than the Cowlitz valley, but as they have been obtained at Astoria, the statement was not altogether correct. They seem to prefer the soft alluvial river bottoms, where they are said to burrow, and probably thus follow down the Columbia. Now they are rarely caught by the Indians, as their skins are not bought by the Hudson's Bay Company, except when passed off on a "green" clerk as muskrat skins. Of their habits I could learn little. An old Indian hunter, who is now a shepherd in the employ of Dr. Tolmie at Puget's Sound, told him that he had frequently seen them running over the snow in the Nisqually valley, so that they probably do not hybernate. A young man who had kept school at Astoria told me that the children sometimes caught them about the school house, where they burrowed, and that they could be caught by running after them, as they did not run fast. When taken they did not offer to bite, and ate vegetable food readily. The specimen sent from there was found drowned in a tanner's vat.

CASTOR CANADENSIS, Kuhl.

Beaver.

BAIRD, Gen. Rep. Mammals, 1857, 355

The beaver is abundant in many of the streams of the wooded regions, and is said to have become more so since trapping has become unprofitable. Near the coast they live in the close vicinity of farms, but are very rarely seen. I have often watched at evening, hoping to see them at work, but they never appeared. The only one I ever obtained was while descending the Chehalis river, where, about sunrise, one of the Indians saw it swimming close to the bank, with

only its nose above water. He shot it, and on getting it into the canoe it proved to be a very large one, extremely fat. We soon after landed, skinned, and cooked it, the Indians considering it a great delicacy, but, though hungry, I thought it barely eatable. A fishy flavor pervaded every part of it, and it was very tough. The Indians were much disappointed at my keeping the tail with the skin, as they are very fond of it; but the taste that can fancy such a compound of gristle and fish oil must be acquired by long trials.

Dimensions of specimen. Head and body, 3 feet long. Tail, one foot long, $4\frac{5}{8}$ inches wide, $3\frac{1}{2}$ inches round at root. Eye black. Skull preserved. Female.

In California I saw a much larger skull of a beaver from the San Joaquin, but resembling this exactly in other respects. It is in the collection of the California Academy of Sciences.

JACULUS HUDSONIUS.

Jumping Mouse.

Dipus hudsonius, ZIMMERMANN, Geographische Geschichte, 1780, 358, (based on Pennant's long-legged mouse of Hudson's Bay.)
Meriones hudsonius, AUD. & BACH. N. Am. Quad. II, 1851, 251.
Jaculus hudsonius, BAIRD, Gen. Rep. Mammals, 1857, 430.

SP. CH.—Above, light yellowish brown, lined finely with black; entire sides yellowish rusty, sharply defined against the colors of the back and belly. Beneath, pure white; feet and under surface of tail, whitish. Body measuring 2.75 to 3.50 inches; tail, 4.50 to 6.00 inches; hind feet, 1.10 to 1.30 inches.

A single specimen of this species was collected in Washington Territory.

HESPEROMYS GAMBELII, Baird.

Western Deer Mouse.

BAIRD, Gen. Rep. Mammals, 1857, 464.

SP. CH.—Very similar to *H. leucopus* in size and proportions. Ears larger, feet shorter. Tail generally a little less than head and body. Above, yellowish brown, much mixed with dusky, but without a distinct broad wash of darker on the back. Entire exterior of fore leg below the shoulder, white.

This wood mouse is common in the forest regions. Near the coast, where the common mouse has not been introduced, it takes up its residence in houses, and is quite as mischievous as the latter. It has, however, one habit not observed in that species—that of making stores of provisions in any place it finds suitable, though with little apparent foresight. It is not uncommon in the morning to find a handful of rice, &c., in your boots, and often it has been brought a considerable distance during the night, showing that several mice must have been industriously employed in collecting it. They will also make a storehouse of your bed while you are asleep, piling the grain about your feet, but never biting or awaking you. It is strange that though you may empty out their stores every day, they are sure to make another deposit each night for weeks.

HESPEROMYS AUSTERUS, Baird.

Black Mouse.

Hesperomys austerus, BAIRD, Pr. A. N. Sc. Phila. VII, April, 1855, 336.—IB. Gen. Rep. Mammals, 1857, 466.

SP. CH.—Fur full and soft; rather smaller than *H. leucopus;* feet larger in proportion.
Young, dark slaty plumbeous. Adult, dark sooty brown, slightly pervaded by yellowish brown on the cheeks and lower part of the sides, the dusky of the sides extending even in the adult to the wrist; both feet above, and under parts, white; tail well haired, as long as head and body, lower half white.

I obtained a specimen of this mouse at the camp August 11, on top of the Cascade mountains.

This drowned itself in a pail of water. At this time there was ice formed every night at our camp.

The second specimen I obtained was also found drowned in a pail of water at our camp on the great Spokan Plain, October 31, 1853. There being no trees within many miles of us, this species probably lives entirely among the grass of the prairies. As we had snow and severe frosts at that time, it probably remains active all winter.

HESPEROMYS BOYLII, Baird.

Long Tailed Mouse.

BAIRD, Gen. Rep. Mammals, 1857, 471.

SP. CH.—Body stout. Ears very large, almost naked. Tail stout, considerably longer than head and body, with long hairs at the end, and 32 vertebræ. Above, mixed brown and yellowish brown; paler on the sides. Outside of fore leg colored to the wrist.

One specimen was collected at Shoalwater Bay, Washington Territory.

HESPEROMYS CALIFORNICUS.

Mus californicus, GAMBLE, Pr. A. N. Sc. Phila. IV, August, 1848, 78, (Monterey.)
Hesperomys californicus, BAIRD, Gen. Rep. Mammals, 1857, 478.

SP. CH.—Very large. Size of a third grown rat. Ears very long, angular. Tail rather longer than body. Color above, sooty brown, passing on the sides to fulvous. Under parts white, tinged with fulvous and ashy. Feet white. Tail brown, a littler darker on the dorsal line. Soles entirely naked.

In a trap set for wood rats I caught, one night, a mouse, which though very similar in proportions and appearance to the rat, proved to be quite different, and even of another genus. I afterwards got two more of them from an old rat's nest that I burned down. There were three or four in it, and they remained until there was scarcely a stick unburnt before deserting it. No rats were in this nest, and I have always found that not more than one or two of those surrounding a tree were inhabited by them, the rest having a dilapidated appearance, and being left to their smaller relatives, these wood mice and field mice.

Of the habits of this wood mouse I know nothing further. They probably much resemble those of the numerous species found in the United States. I may remark here that up to my departure from California, on December 1, I saw no signs of hybernation of any of the small rodentia, except a striped squirrel, which I only saw out once, and having watched often afterward, concluded it had retired for the winter. There was then very little frost.

Dimensions.—Nose to tail, $4\frac{1}{2}$ inches. Tail, $4\frac{3}{4}$. Hind foot, 1 inch. Fore foot to wrist, $\frac{1}{4}$ inch. Ear, $\frac{3}{8}$ inch long, $\frac{5}{8}$ wide.

NEOTOMA FUSCIPES, Cooper, Mss.

BAIRD, Gen. Rep. Mammals, 1857, 495. (From Mss. of J. G. Cooper.)

SP. CH.—Larger than the house rat (*Mus decumanus*). Tail nearly as long as the head and body, compressed at tip Color above, yellowish rusty brown, lined with black. Beneath, soiled white. Hands and toes of hind feet white; the upper part of metatarsus dusky. Tail uniformly dusky all round.

I found the wood rat of California extremely common in all those parts of Santa Clara valley more or less covered with groves of oak and different shrubs. Almost every tree, either of the evergreen or deciduous species of oak, had from one to six of their buildings under it. These are built of short sticks, chips, and sometimes bones, piled with such skill as to shed rain—the upper layers projecting downwards. Their form is conical, and height generally from four to five feet, having about six entrances at the ground, and burrows extending beneath it as a retreat

17th Parallel
35th Parallel

in case their house is demolished.* I tore down several, but could not by that means obtain any of the rats, though, from the warmth of their nest, they had evidently just left it. This nest is composed of fine grass, bark, and leaves, is about large enough to fill a hat, and placed near the middle of the building, about a foot above the ground. By means of galleries and openings like windows in the sides of the pile, they watch the approach of danger from their nest without being seen.

I succeeded in shooting several rats at last, by burning down their houses, and watching for them as they came out. They would stay till the last moment—often until they were much singed. If another nest was near, they ran for it; if not, ascended the nearest tree, and sat stupidly gazing at the destruction of their home, dazzled by the blaze.

I also caught some in a steel trap, baited with biscuit, of which they seemed very fond. They are mostly nocturnal in habits, but sometimes come out in the daytime, when all around is quiet, and then fall a prey to the numerous hawks that are watching for them and the squirrels. This wood rat lays up large stores of acorns, &c., in hollow trees, and has been known to kill, and carry to this retreat, a whole broad of chickens. It is, however, not very troublesome to the farmer, and never makes its residence in houses.

All that I obtained from their nests were males, and in no nest did I find more than two together. The females probably have a nest in hollow trees, where they produce their young, as I was told that they were sometimes driven out with the young clinging to them, as do those of the wood mouse. A hunter told me that when encamped near these rats' nests, he once had a large quantity of ship biscuit stolen by them, and for a long time he suspected the Indians of the theft, until he thought of searching the premises of his four-legged neighbors, where he found the whole of the plunder carefully piled away.

I found these rats quite active up to the 1st of December, and their hybernation is short, if any, in the lower valleys.

Size.—Nose to tail, 9 inches; tail, 8 to $8\frac{1}{2}$; circumference at root, 1 inch. Hind foot, $1\frac{3}{4}$ inches; fore foot to elbow, $2\frac{1}{4}$. Ear, 1 inch long, $1\frac{1}{4}$ wide. Head, $2\frac{1}{2}$ inches long.

NEOTOMA OCCIDENTALIS, Cooper.

Bush-tailed Rat.

Neotoma occidentalis, (Cooper MSS.,) Baird, Pr. A. N. Sc. Phila. VII, April, 1855, 335.
Baird, Gen. Rep. Mammals, 1857, 496.
Neotoma drummondii, Aud. & Bach., N. Am. Quad. I, 1849, 223; pl. xxix.

Sp. Ch.—Size of Norway rat. Fur harsh. Tail densely hairy, the vertebræ as long or longer than the body, exclusive of the head. Color above, broadly grayish lead color, the basal wool but little lighter. Posterior third of soles furred. Body above, brownish plumbeous, with a slight mixture of yellowish brown. Under parts of body and tail, with feet, bluish white.

The "wood rat," as it is called near the coast, inhabits the wooded regions west of the Cascade mountains, but is more abundant in some places than others. I did not hear of it at Puget's Sound, where I inquired for it. At the Cascades of the Columbia I was first told of such an animal, and am inclined to think it prefers the mountains rather than a level country, like that at the Sound and Vancouver. At Shoalwater bay, in July, 1854, I first obtained a specimen. Having occasion to sleep in a log house, at the foot of some high hills, the owner told me that the wood rats were very troublesome to him, eating everything vegetable they could get at, and carrying off articles that they could not use. The house being uninhabited most of the time, we found on entering that they had made a nest on the bedstead,

* An Australian rat of a different genus is described as building houses of the same kind.—(*Hapalotis conditor*, Gould)

and collected a pile of fresh elder leaves, grass, and other food, together with a pair of broken iron hinges, brushes, bones, and other useless articles. We saw none until night, when they began to come in, and one climbed up to the bed, where, finding strangers in possession, he retired behind a rough board with which the joints of the logs were covered inside. Here he kept up a curious ticking sound for some time as if to show his anger at our intrusion. Having got a light, I watched him through a crack, but could not see how he made the "mysterious rapping." I then sharpened a stick and speared him with it as he sat.

Afterwards a family of these rats took up their residence in a house where I lived. They had much the same mischievous habits as the common rat, but were less cunning. I could only catch them in traps by placing these in their way, as they refused cheese, bread, and other baits. We finally succeeded in killing the whole family of seven, which were all full grown. One poisoned itself by eating part of a bird skin preserved with arsenic. We afterwards found the nest made of oakum among a pile of flour barrels. A strong and disagreeable smell was perceptible about it. I never heard these rats squeal or make any sound when frightened or wounded.

The largest specimen measured as follows: Male, head and body, 10 inches. Tail, $8\frac{1}{2}$. Fore leg, $4\frac{3}{4}$; hind leg, $5\frac{1}{4}$ inches. Ear, 1 inch long, $1\frac{1}{4}$ wide. Female smaller.

ARVICOLA TOWNSENDII, Bachman.

Oregon Ground Mouse.

Arvicola townsendii, Bachman, J. A. N. Sc., Phila. VIII, i, 1839, 60.—Ib. In Townsend's Narrative, 1830, 315.
Wagner, Wiegmann's Archiv. 1843, ii, 53.
Aud. & Bach. N. Am. Quad. III, 1853, 209; pl. cxliv, fig. 1.
Baird, Gen. Rep. Mammals, 1857, 527.

Sp. Ch.—Very large, (head and body $5\frac{1}{2}$ inches.) Ears large; two-thirds as long as hind foot; well furred. Tail, including the hairs, rather less than half the head and body; the tail vertebræ twice the length of hind foot. Thumb claw conspicious. Toes long; one-third the whole foot. Fur measuring a little over one-third of an inch, with a slight gloss. Above, dark fuscous brown, with but little yellowish brown visible. Sides paler; beneath, ashy white. Tail almost uniformly brown throughout. Feet liver brown. Skull, 1.27 + 71, or as 100 : 56.

This meadow mouse is abundant on the meadows of Shoalwater bay, where it appears to have much the same habits as the species common in the Atlantic States. It forms summer nests of grass on the surface of the ground, commonly close to a root or log. Though I have frequently examined these, I never found young in them. It also makes galleries or paths through the grass, cutting off closely every stalk that stands in the way. During the annual floods which cover these meadows, great numbers of mice come out on the higher grounds, and thousands are doubtlessly drowned, which assists their many animated enemies in keeping down the numbers of a prolific and destructive animal.

ARVICOLA OREGONI, Bachman.

Arvicola oregoni, Bachman, J. A. N. Sc. Phila. VIII, i, 1839, 60.—Ib. in Townsend's Narrative, 1839, 315.
Aud. & Bach. N. Am. Quad. III, 1853, 232; pl. cxlvii, f. 3.
Baird, Gen. Rep. Mammals, 1857, 537.

Sp. Ch.—About the size and shape of *Arvicola pinetorum* ($3\frac{1}{2}$ inches). Skull .92. Fur short (.3 of an inch). Head short, broad. Ears moderate, barely concealed, quite naked, with a few scattered inconspicious white hairs. Antitragus small. Tail vertebræ not one-third the head and body, longer than the head, one and one-half times the hind feet. Soles hairy for posterior third (.65 long).

Above, dark brown, without any rufous tint. Hairs with obscure tips of yellowish brown. Beneath, lustrous hoary plumbeous ash. Tail corresponding in color to the body, but not sharply bicolored. Feet grayish brown.

One specimen of this species was collected at Shoalwater bay.

FIBER ZIBETHECUS, Cuv.

Muskrat.

BAIRD, Gen Rep. Mammals, 1857, 561.

The muskrat appears to be rather scarce in the western portions of the Territory, where I never saw any signs of their existence. I have been told, however, by credible persons that they were sometimes found, though scarce.

I can only account for this scarcity of an animal so abundant even in the thickly settled portions of the Atlantic States, by supposing that the beaver, where abundant, keeps them away. We find many instances of animals of similar habits thus holding possession by the right of the strongest; of which I will only cite one example among rodentia, that of the Norway rat, which has so far dispossessed every native species in countries where it has been introduced.

LEPUS WASHINGTONII, Baird.

Red Hare

Lepus washingtonii, BAIRD, Pr. A. N. Sc. Phil. VII, April, 1855, 333.—IB. Gen. Rep. Mammals, 1857, 583.

Ears shorter than the head; hind feet much longer than the head. Size about that of *L. sylvaticus*, or a little larger. Fur very soft and full on the body and beneath the feet. Tail very short. Back, sides, and throat reddish brown; the former with many glossy black hairs. Tail lead color above, rusty white beneath. Abdomen pure white. Ears black on the posterior margin and tip of their inner surface; the rest of this surface pale reddish brown, except on the exterior band.

This small species of hare seems peculiar to the forest region west of the Cascade mountains. I have never found it common, however, at any point except about Fort Vancouver or the Columbia, where, on account of the dense bushes they frequented, I found it very difficult to shoot them. They also occur on the borders of prairies in other western parts of the Territory, but are nowhere so abundant as the little Virginian hare is in the rural districts of the middle States. I observed them in winter, when the ground was covered with snow, and there was then no change in their color. A species with black ears and tail is said to be found at the Cascades of the Columbia. During our journey east of the Cascade mountains we saw scarcely any hares, and the Indians told us that some disease had killed nearly all of them. Dimensions of specimen: length, 17 inches.

LEPUS TROWBRIDGII, Baird.

Lepus trowbridgii, BAIRD, Pr. A. N. Sc. Phila. VII. April 1855, 333.—IB. Gen Rep. Mammals, 1857, 608.

SP. CH.—Size small, less than that of *L. auduboni*. Head small. Ears about equal to it in length. Tail very short, almost rudimentary; hind feet very short, well furred, considerably shorter than the head. Color above, yellowish brown and dark brown; beneath, plumbeous gray. Sides not conspicuously different from the back, but paler. Back of neck pale rusty. Ears grayish and black on the external band; ashy gray elsewhere, with little indication of darker margin or tip.

The little hare, or "rabbit," of California, abounds in bushy, dry ground in Santa Clara Valley, and has much the same habits and appearance as the common Virginia hare in the middle States. It sits during day under the shelter of some thicket, and about dusk ventures out cautiously to feed. If started, it runs a short distance only, seeking the nearest concealment—unlike the large species, which trust more to their speed for escape. It is easy to shoot numbers of these little animals, either early in the morning or evening, by watching near their resorts. I have never observed them about wet grounds, and it is said that they do not frequent the hills, like the large hares, but keep entirely in the level prairies.

Length, 13 to 15 inches. Ear, 3 inches. Heel, 3 inches. Fore leg, below elbow joint, $3\frac{1}{2}$. Head, 3 inches.

I was told of another kind of small rabbit of a bluish tint, shorter ears, and which burrowed in the ground, but I could not get any. The accounts of it were also conflicting.

CERVUS CANADENSIS, Erxl.

Elk.

BAIRD, Gen Rep. Mammals, 1857, 537.

The elk is abundant in the dense forests of the Coast Range, and found in less numbers in the other wooded portions of the Territory. It is very wary, and difficult to kill at most times, but is often shot on the small prairies, near the heads of rivers, where it feeds in the evening and early morning. In severe winters, also, when they leave the mountains, and in large herds descend to the warmer prairies along the coast, they are tracked in the snow to their lairs, and shot. Many frequent these prairies every winter, returning in early spring to the mountains. In some places the Indians formerly surrounded the herds, and by gradually narrowing their circle, succeeded in killing many. It is almost useless to hunt them in the forest, where the dense underbrush gives them every advantage over their pursuer.

An intelligent farmer, who formerly hunted elk in New York State, told me that he considered these a different animal, being much larger, and having larger and differently formed horns.

CERVUS COLUMBIANUS, Rich.

Black-tailed Deer.

Cervus macrotis, var. *columbianus*, RICHARDSON, F. B. Am. I, 1829, 255; pl. xx.
Cervus columbianus, BAIRD, Gen. Rep. Mammals, 1857, 659.

SP. CH.—About the size of *C. virginianus*, or less. Horns doubly dichotomous, the forks nearly equal. Ears more than half the length of the tail. Gland of the hind leg about one-sixth of the distance between the articulating surfaces of the bone. Tail cylindrical, hairy and white beneath; almost entirely black above. The under portion of the tip not black. Winter coat with distinct yellowish chestnut annulation on a dark ground. Without white patch on the buttocks. There is a distinct dusky horse-shoe mark on the forehead anterior to the eyes.

I have only seen one species of deer in the Territory, and this only west of the Cascade range. It is not abundant, except in a few places, the most remarkable of which is Whitby's island, at the Straits of De Fuca, where extensive and luxuriant prairies support large numbers of them, now, however, becoming scarce under the continual slaughter kept up at all seasons by the settlers.

While there, in March, 1855, I saw a great many frequently in open daylight, but more commonly at dusk. The fact observed by Lewis and Clark, that when started they always go away by a succession of jumps, with all four feet striking the ground at once, I have often noticed, but have also seen them trot very leisurely away when they perceived the hunter at some distance off. A mottled, and sometimes entirely white variety, is not uncommon on this island and on the coast. I preserved a perfect specimen of this deer.

Dimensions.—Nose to tip of tail, 5 feet 8 inches; tail, 11 inches; height at shoulder, 3 feet. Male: Iris dark brown, horns budding.

CHAPTER II.

REPORT BY DR. GEO. SUCKLEY, U. S. A.

SOREX TROWBRIDGII, Baird.

BAIRD, Gen. Rep. Mammals, 57, 13.

SP. CH.—Above, sooty brown, slightly variegated with hoary; beneath a little paler, but differing only slightly from the back. Head and body 2½ inches; tail 2, hind feet over .5 of an inch.

Two specimens were procured at Steilacoom.

SOREX SUCKLEYI, Baird.

BAIRD, Gen. Rep. Mammals, 1857, 18.

SP. CH.—Above, light chestnut brown; beneath, greyish white. Length 2¼ inches; tail 1½. Hind foot .46 of an inch.

Two specimens were procured at Fort Steilacoom, where it is not rare. (One numbered 24.)

SCALOPS TOWNSENDII, Bach.

Oregon Mole.

Scalops townsendii, BACH. J. A. N. S. Ph. VIII, 1839, 58.—IB. in Townsend's Narr. 1839, 314.
AUD. & BACH. N. A. Quad. III, 1853, 217; pl cxlv.
BAIRD, Gen. Rep. Mammals, 1857, 65.

SP. CH.—Teeth 44. Eye small, but not covered by the integument. Tail rather scantily haired. Nostrils opening on the upper surface of the tip of the snout. Palm large and broad. Color nearly black, with faint purplish or sooty brown reflection. (Sometimes, perhaps, glossed with silvery?)

Four specimens collected at Steilacoom in 1856, (21, 85, 119.)

UROTRICHUS GIBBSII, Baird.

BAIRD, Gen. Rep. Mammals, 1857, 76.

Muzzle prolonged into a cylindrical tube, continued some distance beyond the incisors, terminating in a simple naked bulb. Nostrils cylindrical, opening in the side. Eyes and ears concealed. Tail long and hairy. Fore feet moderately large, shorter than the hind feet. Upper and under surfaces of both covered with small plates.

Tail as long as the body (exclusive of the head.) Color uniform dark sooty plumbeous. Body about 2¼ inches long.

A specimen was collected July 15, 1854, by Mr. Geo. Gibbs, in White River Pass of the Cascade mountains, Washington Territory, north of Mount Rainier. (15.)

FELIS CONCOLOR, Linn.

The American Panther.

Felis concolor, LINN. Mantissa, 1771, 522; pl. ii.
AUD. & BACH. N. A. Quad. II, 1851, 305; pl. xcvi, xcvii.
BAIRD, Gen. Rep. Mammals, 1857, 83.

SP. CH.—Body considerably larger than that of the common sheep. Tail more than half the length of head and body. General color above, a uniform pale brownish-yellow, finely mottled by dark tips to all the hairs. Beneath, dirty white. A black patch on the upper lip, separated from the nose by a triangular white space. Convexity of ear black; tip of tail dusky. o spots or blotches on the body in the adult; a few obsolete ones in the half-grown young. Kittens with the body densely spotted and the tail ringed.

Specimens of the young, (62, 69,) and of the adult (10, 115) were collected at Steilacoom. They are called panthers by the settlers, and are tolerably abundant, a half dozen having been obtained in the neighborhood within a year.

LYNX FASCIATUS, Raf.

Red Cat.

Lynx fasciatus, Raf. Am. Month. Mag. II, Nov. 1817, 46.
Baird, Gen. Rep. Mammals, 1857, 96.
Tiger cat, Lewis & Clark, Travels, II, 1814, 167.

Sp. Ch.—Fur very soft and full. Ears pencilled. Color, rich chesnut brown on the back, a little paler on the sides and on the throat. A dorsal darker band collar on throat, as dark as the sides. Region along central line of belly (rather narrow one) dull whitish, with dusky spots extending to lower part of sides. No spots or bands discernible on the upper part of sides. Ears black inside, with a very inconspicuous patch of grayish. Terminal third of tail above, black.

Specimens were obtained at Fort Steilacoom, (114, 97, 87, 63,) at Olympia, and at Port Townsend, W. T. (134.) This species is called *Pish Pish* by the Nisqually Indians.

CANIS OCCIDENTALIS, var. GRISEO-ALBUS.

Gray Wolf.

"*Canis* (*Lupus*) *griseus*, Sabine, in Franklin's Journal, 654." (Gray.)
Aud. & Bach. N. A. Quad. III, 1854, 279. (Gray.)
Canis (*Lupus*) *occidentalis*, var. *griseus*, Rich, F. B. A. I, 1829, 66. (Gray.)
Canis occidentalis, Dekay, N. Y. Zool. I, 1842, 42; pl. xxvii, f. 2. (Gray.)
"*Canis* (*Lupus*) *albus*, Sabine, in Franklin's Jour. 652." (White.)
Aud. & Bach. N. A. Quad. II, 1851, 136; pl. lxxii. (White.)
var. β, Rich. F. B. A. I, 1829, 68. (White.)
Canis occidentalis, var. *griseo-albus*, Baird, Gen. Rep. Mammals, 1857, 104.

Sp. Ch.—Color of various shades from gray to white.

Four skins were obtained at Fort Dalles, O. T, in 1854, (47, 48, 49, 58.)

Mountain wolf shot on Fifteen Mile Creek, near Fort Dalles, in December.

These wolves are very abundant in the neighborhood of the sources of the streams flowing into the Columbia from the Cascade, and Blue mountains. In the winter, until March, they come down into the valleys, where they are very destructive to horses, hunting them singly or in packs. They destroy the largest horses by hamstringing them while running. This is their favorite way of hunting. They are about 3 feet high. A skin which I saw at Fort Vancouver was much lighter, but otherwise agreed with this specimen. It was from the Columbia, west of the Cascades.

CANIS OCCIDENTALIS, var. NUBILUS.

Dusky Wolf.

Canis nubilus, Say, in Long's Exped. R. Mts. I, 1823, 168.
Doughty's Cabinet Nat. Hist. II, 1832, 265; plate xxiii.
Canis occidentalis var. *nubilus*, Baird, Gen. Rep. Mammals, 1857, 111.

Sp. Ch.—Color, light sooty, or plumbeous brown.

One specimen obtained at Steilacoom, (66.)

CANIS LATRANS, Sa .

Prairie Wolf; Coyote.

Baird, Gen. Rep. Mammals, 1857, 113.

A skin of the young of this species was obtained at Bois de Sioux, Minn., in 1853, and a skull in Washington Territory.

VULPES MACROURUS, Baird.

Prairie Fox.

Vulpes macrourus, Baird, in Stansbury's Exploration Great Salt Lake, (published June, 1852,) 309.—Ib. Gen. Rep. Mammals, 1857, 130.
Vulpes utah, Aud. & Bach., Pr. A. N. Sc. Ph. V, for June 30, 1852, (published July, 1852,) 114.—Ib. N. Am. Quad. III, 1853, 255; pl. cli.
? Vulpes fulvus, Maxim. Reise, II, 1841, 98.

Sp. Ch.—In size, length of fur and tail, exceeding the *Vulpes fulvus*. Tail vertebræ, usually 18 inches in length; breadth between lateral hairs eight to nine inches. Colors of the light variety, similar to those of the red fox, but yellower, and with more white beneath.

Specimens were collected at Fort Dalles, O. T. (40, 43, 56,) and at Fort Boisé (25).

Dimensions of 43.—*Male.*

	Inches.	lines.
From snout to insertion of tail	24	0
tail to end of vertebræ of tail	15	6
same to end of hair	19	6
Length of ear (posteriorly)	4	6
From root of ear, anteriorly, to tip of nose	6	0
Full stretch	45	

VULPES MACROURUS? var. DECUSSATUS.

Oregon Cross Fox.

Baird, Gen. Rep. Mammals, 1857, 127.

Sp Ch.—Legs and belly black. Above, grayish, with dusky cross on shoulders.

Specimens were collected at Fort Dalles, O. T., January 1855, (57, 58.)

VULPES MACROURUS? Var. CINEREO-ARGENTATUS.

Black or Silver Gray Fox.

Baird, Gen. Rep. Mammals, 1857, 128.

Sp. Ch.—Black; the hairs on the hind part of the back with silvery tips.

Two specimens collected at Fort Dalles in 1855, (41, 67.)

VULPES (UROCYON) VIRGINIANUS.

Gray Fox.

Canis virginianus, Erxleben, Systema Regni-Animalis, 1777, 567 (from Catesby).
Vulpes virginianus, Aud. & Bach. N. A. Quad. I, 1849, 162; pl. xxi.
Vulpes (Urocyon) virginianus, Baird, Gen. Rep. Mammals, 1857, 138.

Sp. Ch.—Head and body a little over two feet in length. Tail rather more than half as long. Tail with a concealed mane of stiff bristly hairs. Prevailing color mixed hoary and black; convexity and base of ears, sides of neck, edge of belly, and considerable portion of fore legs rusty or cinnamon. Band encircling the muzzle, much dilated on the chin, black. Throat and lower half of face pure white. Tail hoary on the sides; a distinct stripe above and the tip black; rusty beneath.

Specimens obtained at Fort Vancouver in 1855, (54, 55.)

This fox is called Loot-zah by the Des Chutes Indians.

MUSTELA PENNANTII, Erxl.

Fisher; Black Cat.

Mustela pennantii, Erxleben, Syst. An. 1777, 479. (Based on *Fisher* of Pennant.)
Baird, Gen. Rep. Mammals, 1857, 149.
Mustela canadensis, Schreber, Säugt. III, 1778, 49 ; tab. cxxxiv. (*Pekan* of Buffon.)
Aud. & Bach. N. A. Quad. I, 1849, 307 ; pl. xli.

Sp. Ch.—Legs, belly, tail, and hinder part of back, black ; the back with an increasing proportion of grayish white to the head. Length, over two feet. Vertebræ of tail exceeding twelve inches.

Specimens were collected at Fort Dalles, (53,) and Steilacoom, (45.)

They are found quite plentifully in the thickly wooded districts, along the eastern and, probably, the western base of the Cascade Range, on the parallel of Fort Dalles. Their favorite localities are forests, in the neighborhood of streams.

MUSTELA AMERICANA, Turton.

American Sable; Pine Marten.

Mustela americanus, Turton's Linnaeus, I, 1806, 60.
Mustela americana, Baird, Gen. Rep. Mammals, 1857, 152.
Mustela martes, Jos. Sabine, Zool. App. to Franklin's Journey, 1823, 651.
Aud. & Bach. N. A. Quad. III, 1853, 176 ; pl. cxxxviii, (Huron.)

Sp. Ch.—Legs and tail blackish. General color reddish yellow, clouded with black ; above becoming lighter towards the head, which is sometimes white. A broad yellowish patch on the throat, widening below so as to touch the legs. Central line of belly sometimes yellowish. Tail vertebræ, about $\frac{1}{3}$ the head and body. Outstretched hind feet reach about to the middle of the tail with the hairs. Feet densely furred.

Specimens were obtained from Cape Flattery, (139 ;) Snoqualme river, O. T., (118,) and Fort Boisé, (26.)

PUTORIUS PUSILL S.

Least Weasel.

Putorius vulgaris, Rich. F. B. A. I, 1829, 45.
Mustela pusilla, Dekay, N. Y. Zool. I, 1842, 34 ; pl. xiv, f. 1.
Putorius pusillus, Aud. & Bach. N. A. Quad. II, 1851, 100 ; pl. lxiv.
Baird, Gen. Rep. Mammals, 1857, 159.

Sp. Ch. —Smallest of American weasels. Length about six inches to root of tail. Tail vertebræ one-fifth to one-sixth the head and body. The terminal hairs about one-third the vertebræ, which do not exceed two inches. Tail slender, not tufted at the tip. Above, almost liver brown ; beneath, white. No distinct black tip to the tail, though this is sometimes darker.

Specimen collected at Steilacoom.

PUTORIUS CICOGNANII.

Small Brown Weasel.

Mustela cicognanii, Bonap. in Fauna Italica, Mamm. 1838. Under head of *Mustela boccamela*.
Putorius cicognanii, Baird, Gen. Rep. Mammals, 1857, 161.
Mustela fusca, Aud. & Bach., J. A. N. Sc. Philada. VIII, II, 1842, 288.
Putorius fuscus, Aud. & Bach., N. A. Quad. III, 1853, 234 ; pl. cxlviii.

Sp. Ch.—Length to tail, 8 inches or less. Tail vertebræ, one-third this length. Black of tail, two-fifths its length. Outstretched hind feet reach the end of the vertebræ. In summer, brown above, whitish beneath ; edge of upper lip white. In winter, white ; tail with black tip.

One specimen collected at Puget's Sound.

PUTORIUS RICHARDSONII.

Mustela richardsonii, Bonap. in Charlesworth's Mag. N. H. II, Jan. 1838, 38. ("*M. erminea*, Rich. F. B. A.")
Putorius richardsonii, Bp. in Rich. Zool. Beechey's Voyage, 1839, Mammalia, 10.
Baird, Gen. Rep. Mammals, 1857, 164.
Putorius agilis, Aud. & Bach., N. A. Quad. III, 1853, 184; pl. cxl.

Sp Ch.—Length to tail, 9 inches or less. Tail vertebræ about half this length. Black of tail nearly one-half to one-third its length. Outstretched hind feet reach to the middle of the tail (with hairs) or a little beyond. In summer, dark chestnut brown above; whitish beneath. Whole upper jaw brown. In winter, white. Tail with black tip.

Specimen collected at Fort Steilacoom, August 18, 1854. (20.)

Measurement when fresh.

Around the ears	3	inches.
From front of fore foot to the end of hind foot extreme extension	$12\frac{1}{2}$	"
Total from snout to tip of tail	15	"
Tail	6	"
Fore arm	$\frac{3}{4}$	"
Around chest behind shoulders	$3\frac{3}{4}$	"

PUTORIUS LONGICAUDA.

Mustela longicauda, Bonap. in Charlesworth's Mag. N. H. II, Jan. 1838, 38. (Based on Richardson's description.)
Putorius longicauda, Rich. (ex Bonap.) Zoology Beechey's Voyage to Pacific, 1839. Mammalia, 10.
Baird, Gen. Rep. Mammals, 1857, 169.
Mustela (Putorius) erminea, Rich. F. B. A. I, 1829, 46. ("Carlton House variety, with long tail.")

Sp. Ch.—Length to tail about eleven inches. Tail vertebræ about half this length. Black of tail about one-fourth its length. Above, light olivaceous brown; beneath, brownish yellow; edge of upper lip and chin white. In winter, white; tail with black tip. Light space on belly much wider than in *P. noveboracensis*. Muzzle broad.

Milk river, Neb., August, 1853.

PUTORIUS VISON.

Common Mink.

"*Mustela lutreola*, Forster, Philos. Trans. LXII, 371."
"Sabine, in Franklin's Narr. 1823, 652."
Mustela vison, Brisson, Quad. 1756, 246.
Putorius vison, Gapper, Zool. Jour. V, 1830, 202.
Dekay, N. Y. Zool. I, 1842, 37; pl. xi, f. 1.
Aud & Bach. N. A. Quad. I, 1849, 250; pl. xxxiii.
Baird, Gen. Rep. Mammals, 1857, 177.

Sp. Ch —Tail about half as long as the body. General color, rather dark brownish chestnut. Tail nearly black. End of chin white, but not the edge of the upper jaw.

Disputed island, near Vancouver's island, (64); Klamath Lake; Fort Steilacoom, August 10, (18;) Cape Flattery, (137, 146, 138, 140.)

ENHYDRA MARINA, Flem.

Sea Otter.

Baird, Gen. Rep. Mammals, 1857, 189.

The imperfect skin collected was procured at Steilacoom, although I could not learn its precise locality. Almost all the skins of this otter now gathered by the Hudson Bay Company, come from the Indians north of the 50th parallel.

MEPHITIS MEPHITICA.

Skunk.

Mephitis mephitica, Baird, Gen. Rep. Mammals, 1857, 195.
Viverra mephitica, Shaw, Museum Leverianum, 1792, 172; plate.—Ib. Gen. Zool. I, 1800, 390.
Mephitis chinga, Tiedemann, Zool. I, 1808, 362. (In part.)
Aud. & Bach. N. A. Quad. I, 1849, 317; pl. xlii.

Sp. Ch.—Soles naked, except on the posterior third. Tail vertebræ half the length of head and body, with hairs considerably less. Color black; a narrow frontal line, a broad triangular nuchal patch, continuous with a narrow line on either side of the back nearly to the tail, and a tuft at the end of the tail, white. The dorsal stripes sometimes broader; sometimes wanting, as also the nuchal patch.

Bois de Sioux. (3.)

MEPHITIS OCCIDENTALIS, Baird.

California Sku .

Mephitis occidentalis, Baird, Gen. Rep. Mammals, 1857, 194.
? *Mephitis mesomelas*, St. Hilaire, Voy. de la Venus, Zoologie, I, 1855, 133; plate.

Sp. Ch.—Size of a cat. Tail vertebræ two-thirds the length of head and body. Bony palate with small narrow emargination in the middle of its posterior edge. Color black, with a white nuchal patch, bifurcating behind and reaching to the tail, which is entirely black.

Fort Steilacoom.

TAXIDEA AMERICANA.

American Badger.

Ursus taxus, Schreber, Säugt. III, 1778, 520, fig. 142, B. (From Buffon.)
Meles taxus, var. *β americanus*, Boddaert, Elenchus Anim. I, 1784, 136.
Meles americanus, ("Bodd.") Zimmermann, Pennant's Arktische Zoologie I, 1787, 74.
Taxidea americana, Baird, Gen. Rep. Mammals, 1857, 202.
Meles Labradoria, Meyer, Zool. Archv. II, 1796, 45.
Aud. & ach. N. A. Quad. I. 1849, 360; pl. xlvii.

Sp. Ch.—Head grizzled gray, black on the end of snout, and along the eyes. A median white line from near the nose to the nape. Legs and a crescentic patch before the ears black. Cheeks and under parts generally white.

Three specimens were collected on the Upper Missouri.

PROCYON HERNANDEZII, Wagler.

Black-footed Raccoon.

Procyon hernandezii, Wagler, Isis, XXIV, 1831, 514.
Baird, Gen. Rep. Mammals, 1857, 212.

Sp. Ch.—Larger than *P. lotor*. General color grayish white, with a tinge of yellowish; long hairs tipped with black. Under fur dark brown. A large oblique black patch on the side of the face continuous with a paler one under the chin. Sides and under part of the muzzle, posterior margin of the cheek patch, and the ear, whitish. Tail tapering to tip, with five or six annuli and the tip black; the annuli half as wide only as the rusty whitish interspaces. Hind feet exceeding four inches; the upper surface mostly dark brown. Naked part of the soles three inches.

Varies in lighter colors and substitution of rusty brown or chestnut for the black tints.

Fort Steilacoom; two specimens. No. 4, killed January 26.

URSUS AMERICANUS.

Black Bear.

Baird, Gen. Rep. Mammals, 1857, 225.

One skull collected at Steilacoom.

SCIURUS FOSSOR, Peale.

California Grey Squirrel.

Sciurus fossor, Peale, Mamm. and Birds, U. S. Ex. Ex. 1848, 55.
Aud. & Bach. N. Am. Quad. III, 1854, 264; pl. cliii, f. 2.
Baird, Gen. Rep. Mammals, 1857, 264.
Sciurus heermanni, Leconte, Pr. A. N. Sc. Phila. VI, Sept. 1852, 149.

Sp. Ch.—Size of *S. vulpinus*, but more slender. Tail vertebræ as long as the body, with the hairs, much longer. Five upper molars. Above, grizzled bluish grey and black; beneath, white, without any differently colored separating line. Tail black, with the exterior white; the whole under surface finely grizzled. Back of ears and adjacent tuft on the occiput, chestnut.

Fort Dalles, O. T., January, 1855.—(Nos. 36, 37, 38.)

No. 36; January 17, 1855.—Large grey squirrel of Lewis & Clark.

Ears long; fur of ears, on their anterior border, whitish and sparse; inside thinly covered with whitish; outside sparsely covered with fulvous fur. Edges of eyelids sparsely covered with yellowish white. Whiskers jet black. Tip of nose black, with a dark stripe leading to the forehead. Cheeks and throat white, tinged with fulvous, with a few fine black hairs interspersed on the cheeks. Fur of top of head (gray?) at the base, for one-half its length, then black, subterminally white, tipped with white, with some longer black hairs interspersed. Fur of the back the same, only longer, and with scattering long hairs of jet black. Inside of legs and the throat, chest, and belly, white. The hind legs have less white. In stroking smooth and flattening the tail a broad subterminal bar of black is seen its whole length on each side, followed by a tip or edging of white; two other lesser bars are found nearer the roots of the hair on each side of the median line, when the tail is flattened.

Female having young was seen March 25th.

Dimensions of fresh skin.

	Inches.	Lines.
Length of skin to root of tail	14	6
Tail, (vertebræ,) about	12	6
Including fur	15	6
Whiskers	2	9
Fur on middle of tail	3	.....
Breadth of tail		2

This squirrel inhabits the oak groves in the neighborhood of Fort Dalles, and is also found in the high pine trees in the neighborhood of the oaks.

Wasco name, *Cow ten.*

They are most excellent eating; and average, when full grown, 2 pounds in weight.

No. 37; January 18.—Sciurus; male.

Measurements.

	Inc.	Lines.
Length from point of nose to the insertion of tail	11	3
From insertion of tail to end of vertebræ	10	7
Of hairy tip	14	.....
From tip of longest nail of fore foot to do. of hind foot, extreme stretch	20	.....
Length of ear, measured posteriorly	1	3
Of space between ears	1	4
From heel to end of longest nail of hind foot	3	2
Length of head from occipital protub. to end of nose	3	.....
Length of whiskers	3	6
Space between eyes	1	6
Length of hand, including longest nail	1	9
Width of tail, spread out	7	.....
4th toe longest; weight, 2 lbs.		

No. 38; January 15.—Female.

	Inches.	Lines.
From point of nose to insertion of tail	11	6
From insertion of tail to end of vertebræ	11	.....
From same to end of hair	14	3
Extreme stretch	19	
Weight, 2 lbs.		

SCIURUS RICHARDSONII, Bach.

Richardson's Squirrel.

Sciurus richardsonii, Bachman, Pr. Zool. Soc. Lond. VI, 1838, 100.—Ib. Charlesworth's Mag. N. H. III, Aug. 1839, 385.—Ib. Jour. Ac. N. Sc. Phil. VIII, i, 1839, 64.—Ib. Townsend's Narrative, 1839, 318.
Aud. & Bach. N. Am. Quad. I, 1849, 41; p. v.
Baird, Gen. Rep. Mammals, 1857, 273.

Sp. Ch.—Size larger than the Hudson's Bay squirrel. Ears with long hairs, presenting the appearance of tufts. Tail shorter than the body. Under surface of feet hairy from heel to metatarsals, then nearly naked. Above, reddish brown, varied with annulations of black, lighter on the sides; beneath, dull white; a dark line separating colors of sides from belly. Tail bushy, sub-cylindrical, dark reddish brown in the centre, entirely of a pure glossy black at tip. The hairs all long and coarse. Hairs on the tail generally, (except at tip,) glossy black beyond the rufous portion, and more or less tipped with paler rusty.

Specimens collected at St. Mary's Mission in 1853.—(No. 3.)

SCIURUS DOUGLASSII, Bach.

Oregon Red Squirrel.

Sciurus douglassii, ("Gray,") Bachman, Pr. Zool. Soc. Lond. VI, 1838, 99.—Ib. Jour. Acad. Nat. Sc. Phila. VIII, i, 1839, 63.—Ib. Charlesworth's Mag. N. H. III, 1839, 331.—Ib. Townsend's Narrative, 1829, 317.
Wagner, Suppl. Schreb. Säug. III, 1843, 177.
Schinz, Syn. Mam. II, 1845, 10.
("Bach.") Aud. & Bach. N. Am. Quad. I, 1849, 370; pl. xlviii.
Baird, Gen. Rep. Mammals, 1857, 275.
Sciurus suckleyi, Baird, Proc. Acad. Nat. Sc. Phila. VII, April, 1855, 333.

Size that of *Sciurus hudsonius*, or a little larger. Ears well tufted; tail shorter than the body, scarcely flattened. Soles naked in the centre. Above, dull rusty and black, mixed; the latter quite predominant; beneath, clear bright buff, without mixture of dark or annulated hairs. A dark stripe on the sides. Tail dull chestnut centrally, darker above; then black and margined all round with rusty white. Hairs at tip of tail entirely black, except at their extremity.

More northern specimens in winter have the soles densely hairy to the toes, the fur much fuller and softer, the under parts with dusky annulations, the general hue grayer. Size about that of *S. hudsonius*, or a little larger. Head short, broad. Whiskers longer than the head; black. Thumb, a mere callosity; fingers well developed, the central two longest and nearly equal; the inner rather longer than the outer; claws large, compressed, and much curved; palms naked. On the hind feet the inner toe is shortest, reaching only to the base of the claw of the outer, which comes next in size; the fourth is longest, the third and second little shorter. Claws all large and much curved. In summer the soles are naked, except along the edges and the extreme heel; in other words, there is a narrow central line of naked skin from near the heel; they are more hairy in winter. The ears are moderate, with short close hairs on their concavity; the back of the ear is covered with long hairs, those near the upper margin longest, and projecting beyond nearly five lines in some specimens; these tufts are nearly black. The tail is small, shorter than the body, moderately flattened; the hairs rather short, and, as on the rest of the body, coarse and stiff.

Many specimens of this species were collected at Fort Steilacoom. The food of the present species differs from that of those collected in the Rocky mountains, (*S. richardsonii*,) in being confined to the cone seeds of the fur and spruce, whereas in the Rocky mountains the squirrels live on the seeds of the *red pine*. Both species have the same habits and peculiarities of the red squirrel of the middle States, very familiarly chatting and "scolding" when disturbed by the presence of man, when they become easy prey to the gunner. I have observed them here in mid-winter running about in the woods as actively as in warm weather, and they, therefore, do not become torpid and hybernate. Specimen No. 13 was killed about the first of July.

TAMIAS QUADRIVITTATUS.

Missouri Striped Squirrel.

Sciurus quadrivittatus, Say, in Long's Exped. R. Mts. II, 1823, 45.
Tamias quadrivittatus, Wagner, Suppl. Schreb. III, 1843, 234.
Aud. & Bach. N. Am. Quad. I, 1849, 195; pl. xxiv.
Baird, Gen. Rep. Mammals, 1857, 297.

Sp. Ch.—Tail, with the hairs, nearly or quite as long as the body. A grayish white stripe along the top of the head, with branches passing above and below the eye. The stripe bordered above and below by darker ones, and separated behind the eye by a dark line. A gray or hoary patch behind the ears. Sides of body deep ferruginous; back with five about equidistant dark stripes, nearly black on the posterior part of the body, their intervals forming four grayish white lines of similar dimensions to them. Tail, when flattened out, ferruginous externally, then black, then ferruginous. Body beneath, dirty grayish white. Length, 4 to 5 inches. Hind foot, 1. 20 inch.

Blue Mountains, O. T., October, 9, 1854.—(No. 30.)

This specimen measured 4.50 inches to the root of the tail; the tail 4.25. Another (lost) was of the same size.

TAMIAS TOWNSENDII.

Townsend's Striped Squirrel.

Tamias townsendii, Bachman, Jour. Phila. Acad. Nat. Sc. Phila. VIII, 1, 1839, 68.—Ib. in Townsend's Narrative, 1839, 321.
Wagner, Wiegmann's Archiv. 1843, II, 44.
Aud. & Bach. N. Am. Quad. I, 1849, 159; pl. xx.
Baird, Gen. Rep. Mammals, 1857, 301.
Tamias cooperii, Baird, Pr. Ac. Nat. Sc. Phila. VII, April, 1855, 334.

Sp. Ch.—Larger than *T. striatus*. Tail, with hairs, nearly or quite as long as the body. Sides of head striped. Above and on the sides rufous brown, with five dark stripes reaching to the tail, the intervals between which are scarcely or but seldom paler than the ground color; beneath, dull white. Ears dusky brown, hoary posteriorly. Tail bright chestnut beneath, margined with ashy white, within which is a band of black. Length 5 to 6 inches. Hind foot 1.40 to 1.50.

Varies in rather paler colors, ash-colored interspaces, and sometimes the back with black hairs interspersed, so as to obscure or nearly conceal the dorsal stripes.

Many specimens of this species were collected at Steilacoom. It hybernates in winter.

SPERMOPHILUS DOUGLASSII.

Columbia Ground Squirrel.

Arctomys Spermophilus douglassii, Rich. F. B. A. I, 1829, 172.
Spermophilus douglassii, F. Cuvier, Suppl. Buff. I, Mamm. 1831, 333.
Aud. & Bach. N. Am. Quad. I, 1849, 373; pl. xlix.
Baird, Gen. Rep. Mammals, 1857, 309.

Sp. Ch.—Similar in most all respects to *S. beecheyi*, but with the space on the nape and back, between the light colored more lateral patches, of a uniform dark brown, nearly black.

Fort Dalles, O. T., January and April, 1855.—(39, 52.)

39. Squirrel or marmot, called at Fort Dalles the rock squirrel; Indian name, woskee. (Walla-Walla.) Ears extremely fulvous, with scattering, long, black hairs; inside well covered with pale brown, darker near the tip; anterior edges, extremely dark brown; posterior, pale. Eyelids, white. Face, brownish white, the hairs posteriorly becoming varied. Chin and fore thoat, brownish white, becoming more foxy on the breast. The hairs of the latter are dusky at the base.

General aspect of back and sides.—Sides silvery from below the ears to false ribs. These silvery patches are separated on the back by a dark stripe about ¾ of an inch in width, along the middle from the forehead, running posteriorly to the posterior half of the body, where it becomes expanded into the general brown color of those parts. The whole is varied with irregular whitish and brown wavy lines, their interspersions giving in certain lights a mottled appearance. Tail, brownish white, each hair with 3 black bars. Inside of legs fulvous. They are exceedingly numerous about the Dalles, become very fat, and are excellent eating.

Dimensions.—Male.

	Inches.	Lines.
Length from point of nose to insertion of tail	12	
insertion of tail to end of vertebræ	3	3
hair	9	6
From tip of longest nail of hind foot to same of fore foot	15	9
Length of ear, measured posteriorly	1	2
From heel to longest third nail of hind foot	2	6
Between the eyes	1	
Length of head from occipital protuberance to end of nose	2	7
hand, including nail	1	6
fur from middle of back		7

Female.—April 7, 1855, No. 52.—Five teats on each side.

Dimensions.—Nose to insertion of tail, 10½ inches. End of caudal vertebræ, 17¾ inches. End of hair, 19¾ inches.

SPERMOPHILUS TRIDECEM-LINEATUS.

Striped Prairie Squirrel.

Sciurus tridecem-lineatus, Mitchell, Medical Repository, XXI, Jan. to June, 1821, 248.
Spermophilus tridecem-lineatus, Aud & Bach. N. Am. Quad. I, 1849, 294; pl. xxxix.
Baird, Gen. Rep. Mammals, 1857, 316.

Sp. Ch.—About the size of *Sciurus hudsonius*. Ears very short. Tail vertebræ about half the length of body, or a little longer. Claws long; that of thumb rather diminutive. Above dark brown, with light stripes and lines of light spots alternating with each other, six of the former and five of the latter generally very distinct. Tail with a brownish yellow margin and tip, and within this a border of black. Length, 5 to 6 inches. Tail vertebræ, 3.50 to 4 inches. Hind foot 1.30 to 1.40.

Minewakan, Minnesota, and the upper Missouri.

CYNOMYS LUDOVICIANUS.

Missouri Prairie Dog.

Arctomys ludovicianus, Ord, Guthrie's Geog. 2d Am. Ed. II, 1815, 292, 302.
Spermophilus ludovicianus, "Lesson, Manual, 244, 658."
F. Cuvier, Suppl. Buffon, I, Mam. 1831, 316.
Aud. & Bach. N. Am. Quad. II. 1851, 319; pl. xcix.
Cynomys ludovicianus, Baird, Gen. Rep. Mammals, 1857, 331.

Size of fox squirrel, *Sc. vulpinus*, but heavier; ears very short, not projecting above fur. Tail short, with the hairs, about one-third the length of body. Claws long, very stout; the thumb of fore feet armed with a long claw instead of a flat nail. Soles with a patch of hair. Color above, reddish brown or cinnamon, with the tips of the hairs lighter and with scattered black hairs interspersed; beneath, brownish white or yellow. In winter of a more grayish cast above. Hairs on the upper part lead color at base, then pale cinnamon white to cinnamon. Tail like the back, its tip black, with the hair light colored at base. Length about 12 inches; tail, with hairs, 4 inches; hind foot about 2.25 inches.

Upper Missouri.

ARCTOMYS FLAVIVENTER, Bachman.

Yellow-Footed Marmot.

Arctomys flaviventer, Aud. & Bach. Pr. A. N. Sc. Phila. I, 1841.—Ib J. A. N. Sc. Phila. VIII, II, 1842, 309.—Ib. N. Am. Quad. III, 1853, 160; pl. cxxxiv.
Baird, Gen. Rep. Mammals, 1857, 343.

Sp. Ch.—Size of common woodchuck. Above, yellowish brown, somewhat grizzled with gray. Under parts of body and tail, and the legs all round, inside and out, reddish chestnut.

This specimen, (60) an adult female, was obtained on the north side of the Columbia, opposite Fort Dalles, May 20, 1855; is not found, so say the Indians, on the south side of the river, at least in the vicinity of Fort Dalles. They prefer rocky places; utter a shrill chirp or whistle when discovered.

Measurement of specimen No. 60, *procured May* 19, 1855.

	Inches.	Lines.
Length from tip of snout to insertion of tail	14	9
insertion of tail to tip of caudal vertebræ	4	6
end of vertebræ to tip of hair	2	0
hand to end of longest claw	1	7
heel " " "	2	10
tip of nose to angle of eye	1	6

Iris, hazel; muzzle and chin, hair short, grayish white. Hairs on crown of head, brown, some tipped with whitish. Scattering long black hairs are found interspersed. Fur on back of the neck, blackish brown at the base for ½ an inch, then foxy, then dark brown, the greater portions are tipped with white, these white ends being of irregular length, a few are tipped with brownish black.

Hair on anterior portion of back, shorter as if worn off. Hairs of posterior portion of back similar to those of the neck, except that the brown is lighter and the general appearance more ferruginous. Fur of breast, shoulders, fore arm, inside of thighs, legs, and belly, foxy yellow, with lighter tips and darker bases in many situations. Soles of feet black. Tail, reddish brown above, some of the hairs near the insertion tipped with whitish. Under surface of tail darker. Posterior surface of ear sparsely covered with short grayish white hairs. The edges of the ears are black.

A light band in front of the eyes from lore to lore. Teeth white.

APLODONTIA LEPORINA, Rich.

Sewellel; Sho t'l.

BAIRD, Gen. Rep. Mammals, 1857, 353.

SP. CH.—Size of muskrat. Tail scarcely appreciable. Color reddish brown.

Three specimens collected at Steilacoom—(11, 93, 92.)

They are found in considerable numbers on the Cowlitz rivers, as well as in other localities near here. Being about the size of muskrats, their skins were formerly palmed off to the Hudson Bay Company's agents by the Indians as skins of that animal, thereby frequently deceiving the new and inexperienced employés of the company. Mr. Gibbs (who presented me with the specimen sent) has handed me the following notes concerning it:

"The specimen I send you was obtained at Seattle, where it was killed in a garden. Its name, in the Nisqually language, is Showt'l, (*Showhurll,* Suckley.) Color gray; hair short and coarse; legs short; eyes small; tail almost wanting. This animal burrows extensively in the ground. It chiefly frequents spring heads in rich moist places, and is found as far up as the dividing ridge of the Cascade mountains and on both sides of the divide. I noticed their burrows in 1853 at the top of the main Yakima pass. Near their abodes were small bundles of some herb or plant cut with nicety and laid out on logs to dry or wilt. The Indians trap them, and value their meat very much as food."

The Nisqually Indians formely made garments by sewing together a number of the dried skins of this animal. They are caught generally by traps resembling in action our "figure 4" traps.

CASTOR CANADENSIS, Kuhl.

Beaver.

BAIRD, Gen. Rep. Mammals, 1857, 355.

Milk river, Neb.

DIPODOMYS PHILLIPII, Gray.

BAIRD, Gen. Rep. Mammals, 1857, 412.

SP. CH.—Above yellowish brown; beneath white, with a white stripe across the thighs. Tail much longer than the body; black, with a white stripe on each side.

Walla-Walla, 1854, No. 51. Called Sim-tup-tup by the Wasco Indians. They are also found near the Dalles, at the bases of the eastern spurs of the Cascades mountains.

The Indians say that they find them most plentiful about the berry patches on the eastern slope of the Cascades. That from Walla-Walla was probably found in the Blue mountains.

THOMOMYS DOUGLASSII.

Columbia Gopher.

Geomys douglassii, RICH. F. Bor. Am. I, 1829, 200; pl. xviii, C, fig. 1–6. (Skull.)—IB. Zool. of Blossom, 1839, 12.
LECONTE, Pr. A. N. Sc. Phila. VI, 1852, 162
Ascomys douglassii, WAGNER, Suppl. Schreb. III, 1843, 392.
Pseudostoma douglassii, AUD. & BACH. N. Am. Quad. III, 1853, 24; pl. cv.
Thomomys douglassii, GIEBEL, Säugt. 1855, 531.
BAIRD, Gen. Rep. Mammals, 1857, 394.

SP. CH.—Cheek pouches large; sparsely haired on the outer wall. Tail, one-third to nearly one-half the body. Upper incisors nearly plane in front, with a distinct and sharp groove. Hand large; claws very large and stout; palm and digits

very short. Middle claw 5½ lines above; below, occupying nearly two fifths of the hand; its toe about two-eighths. First finger or thumb very short, barely reaching over two-sixths the hand.

Color.—Above, dusky chestnut brown, but slightly mottled on sides and beneath with an ashy brown tinge. Cheek pouches whitish at the bottom, the line of demarcation indistinct, and the brownish color of the marginal region running down into the pouch. Tail grayish; dusky above.

Many specimens were collected at Fort Steilacoom, (8, 840;) also several at Fort Dalles, (59.)

No. 59, Female.—Dalles, April 25.

	Inches.	Lines.
Nose to insertion of tail	5	4
Tail	1	10
Nose to ear	1	4
Central claw of fore foot about		4
Extreme stretch	7	7

PEROGNATHUS FASCIATUS, Pr. Max.

Perognathus fasciatus, Pr. Max. Nova Acta C. L. C. Acad. XIX, i, 1839, 369; tab. xxxiv.—Ib. Reise innere Nord-Amerika, I, 1839, 449.
Aud. & Bach. N. Am. Quad. III, 1854, 341.
Baird, Gen. Rep. Mammals, 1857, 420.

Sp. Ch.—Considerably larger than the house mouse. Tail as long as the body without the head. Antitragus conspicuously lobed. Soles naked. Above reddish yellow, closely lined with black; fore legs all round, feet and under parts white; a pale reddish yellow immaculate band on each side.

This animal was found in the vicinity of Fort Union, Nebraska.

PEROGNATHUS MONTICOLA, Baird.

Baird, Gen. Rep. Mammals, 1857, 422.

Sp. Ch.—Antitragus lobed; soles naked. About as large as the domestic mouse. Tail rather shorter than the head and body, fully coated with hair. Hind feet rather short. Color above mixed cinnamon and dusky; flanks scarcely clearer, beneath white; tail colored to correspond with these regions. Hairs below, as well as above, plumbeous at base, those above exhibiting this color for nearly two-thirds their length. Outside of fore leg dusky to the wrist.

St. Mary's Mission, Rocky Mountains.

PEROGNATHUS FLAVUS, Baird.

Perognathus flavus, Baird, Pr. A. N. Sc. Phila. VII, April, 1855, 332.
Gen. Rep. Mammals, 1857, 423.

Sp. Ch.—Considerably less than the common mouse. Tail equal to or less than the head and body, scarcely different in color above and below. Hind feet short. Above, yellowish buff, with dusky tips to some of the hairs; clearer on the sides. Beneath, snowy white to the roots of the hairs. Fore leg white to the shoulders. Hairs on the back plumbeous only on their basal half.

Found between Milk and Maria rivers, Nebraska.

JACULUS HUDSONIUS.

Jumping Mouse.

Dipus hudsonius, Zimmermann, Geog. Geschichte, II, 1780, 358.
Meriones hudsonius, Aud. & Bach., N. Am. Quad. II, 1851, 251; pl. lxxxv.
Jaculus Hudsonius, Baird, Gen. Rep. Mammals, 1857, 430.

Sp. Ch.—Above, light yellowish brown, lined finely with black; entire sides yellowish rusty, sharply defined against the colors of the back and belly. Beneath, pure white; feet and under surface of tail whitish. Body, 2.75 to 3.50 inches; tail, 4.50 to 6.00; hind feet, 1.10 to 1.30.

Specimens collected at Steilacoom.

MUS DECUMANUS, Pallas.

Brown Rat; Norway Rat.

Baird, Gen. Rep. Mammals, 1857, 438.

This species was unknown at Steilacoom until about five years ago, when it was introduced

probably by the Hudson Bay Company's ships, and other merchant vessels. They are now exceedingly abundant in the storehouses of the Hudson Bay Company and the garrison. Before that, the hairy-tailed rat was alone found. The Indians (Nisqually) have given it the hairy-tailed rat's name, *Squawt hun*, or large mouse.—(No. 9.)

HESPEROMYS GAMBELII, Baird.

BAIRD, Gen. Rep. Mammals, 1857, 464.

SP. CH.—Tail a little less or about equal to head and body. Above, yellowish brown, much mixed with dusky, but without a distinct broad wash of darker on the back. Entire outside of fore leg, below the shoulders, white.

Fort Dalles, Oregon Territory, 1855.—(42.)

Dimensions.

	Inches.	
From point of nose to insertion of tail	3	10
Total length to tip of tail, (about)	7	6
Extreme stretch	5	2
Length of ear, measured posteriorly		7
Between ears,		$5\frac{1}{2}$
Length of hand		5
From heel to longest toe of hind foot		9
Whiskers	1	3
Between eyes, measured from their convexities		6

HESPEROMYS AUSTERUS, Baird.

Oregon Mole.

BAIRD, Gen. Rep. Mammals, 1857, 466.

SP. CH.—Sooty brown, slightly mixed with yellowish brown on the cheeks and lower part of sides; the dusky color extending to the wrist. Feet and under parts white. Tail well haired, as long as head and body; lower half white.

Many specimens of this species were obtained at Steilacoom.—(4, 5, 22, 86.)

HESPEROMYS SONORIENSIS, Leconte.

Hesperomys sonoriensis, LECONTE, Pr. A. N. Sci. Phila. VI, October, 1853, 413. (Sonora.)
BAIRD, Gen. Rep. Mammals, 1857, 474.
Arvicola (*Hesperomys*) *sonoriensis*, AUD. & BACH. N. Am. Quad. III, 1854, 296 (from Leconte.)
? *Mus leucopus*, RICH. Zoöl. Jour. III. 1828.—IB. F. B. Am. I, 1829, 142.

SP. CH.—Young, light ashy gray; adult, with a tinge of yellowish brown; in neither is there any dorsal stripe. Tail scarcely longer than the body, exclusive of the head. Posterior tubercle of sole small, rounded, far forward. Soles hairy for half their length. Tail white, except a narrow line above of dusky. Ears large, with long hairs; one-half of the ear hoary, in strong contrast with the dusky of the remaining portion.

Specimen obtained at St. Mary's Mission, Rocky mountains.

NEOTOMA OCCIDENTALIS, Cooper.

Bushy-tailed Rat.

BAIRD, Gen. Rep. Mammals, 1857, 496.

SP. CH.—Size of Norway rat. Fur harsh. Tail densely hairy; the vertebræ as long or longer than the body, without the head. Color above, brownish plumbeous, mixed with yellowish brown. Beneath, with feet, bluish white.

New Dungeness, Straits of de Fuca.—(149.)

NEOTOMA CINEREA.

Rocky Mountain Rat.

Neotoma drummondii, Rich. F. B. A. I, 1829, 137.
Neotoma cinerea, Baird, Gen. Rep. Mammals, 1857, 499.

Sp. Ch.—Size of Norway rat. Fur very soft. Tail densely hairy; the vertebræ shorter than the body, exclusive of head. Above, light yellowish brown, deeper on the sides. Beneath, with feet, snowy white.

Milk river, Nebraska.

ARVICOLA TOWNSENDII, Bachman.

Oregon Ground Mouse.

Arvicola townsendii, Bachman, J. A. N. Sc. Phila. VIII, I, 1839, 60.—Ib. In Townsend's Narrative, 1830, 315.
Aud. & Bach. N. Am. Quad. III, 1853, 209; pl. cxliv. fig. 1.
Baird, Gen. Rep. Mammals, 1857, 527.

Sp. Ch.—Very large, (head and body 5½ inches.) Ears large; two-thirds as long as hind foot; well furred. Tail, including the hairs, rather less than half the head and body; tail vertebræ twice the length of hind foot. Thumb claw conspicuous. Toes long; one-third the whole foot. Fur measuring a little over one-third of an inch, with a slight gloss. Above, dark fuscous brown, with but little yellowish brown visible. Sides paler; beneath, ashy white. Tail almost uniformly brown throughout. Feet liver brown. Skull, 1.27 + 71, or as 100 : 56.

Puget's Sound, W. T., 1856.

The field mice of Washington Territory, with other vermin, are exceedingly destructive in the gardens. It is scarcely possible to raise either melons, cucumbers, pumpkins, or squash, owing to the depredations of these little animals. Seed after seed is planted, and as regularly dug up and eaten by them in a few days, scarcely one in many sowings being allowed to grow.

ARVICOLA OREGONI, Bachman.

Arvicola oregoni, Bachman, J. A. N. Sc. Phila. VIII, I, 1839, 60.—Ib. in Townsend's Narrative, 1839, 315.
Aud. & Bach. N. Am. Quad. III, 1853, 232; pl. cxlvii, f. 3.
Arvicola (*Chilotus*) *oregoni*, Baird, Gen. Rep. Mammals, 1857, 537.

Sp. Ch.—About the size and shape of *Arvicola pinetorum*, (3½ inches.) Skull .92. Fur short, (.3 of an inch.) Head short, broad. Ears moderate, barely concealed, quite naked, with a few scattered inconspicuous white hairs. Antitragus small. Tail vertebræ not one-third the head and body, longer than the head, one and one-half times the hind feet. Soles hairy for posterior third, (.65 long).

Above, dark brown, without any rufous tint. Hairs with obscure tips of yellowish brown. Beneath, lustrous hoary plumbeous ash. Tail corresponding in color to the body, but not sharply bicolored. Feet grayish brown.

Steilacoom, W. T., 1855.

FIBER ZIBETHICUS, Cuv.

Muskrat.

Baird, Gen. Rep. Mammals, 1857, 561.

Two specimens of the well known muskrat were collected at Steilacoom, (5, 117.) No. 5, killed January 28.

LEPUS WASHINGTONII, Baird.

Red Hare.

Lepus washingtonii, Baird, Pr. A. N. Sc. Phil. VII, April, 1855, 333.—Ib. Gen. Rep. Mammals, 1857, 583.

Ears shorter than the head; hind feet much longer than the head. Size about that of *L. sylvaticus*, or a little larger. Fur very soft and full on the body and beneath the feet. Tail very short. Back, sides, and throat reddish brown; the former with many glossy black hairs. Tail lead color above, rusty white beneath. Abdomen pure white. Ears black on the posterior margin and tip of their inner surface; the rest of this surface pale reddish brown, except on the exterior band.

Specimens of this species were obtained at Steilacoom (7, 133), and at Vancouver. Two white winter skins and one summer (140, 144, 142) of this, or a closely allied species, were obtained from the latitude of 54° 40′.

LEPUS CAMPESTRIS, Bach.

Prairie Hare.

Lepus campestris, Bach. J. A. N. Sc. Phila. VII, II, 1837, 349.—Ib. VIII, I, 1839, 80.
Baird, Gen. Rep. Mammals, 1857, 585.
Lepus townsendii, Bachman, J. A. N. Sc. Phila. VIII, I, 90; pl. ii.
Aud. & Bach. N. Am. Quad. I, 1849, 25; pl. iii.

Sp. Ch.—Larger than *Lepus americanus*. Ears about one-fifth longer than the head. Fur soft and full, especially in winter. Tail as long as the head. Hind feet considerably longer than the head; somewhat longer than the ears.

In summer, back, rump, sides of limbs, external and internal bands of the ear, and the throat, yellowish gray, varied more or less with brown. Beneath, white. Tail entirely white, above and below; in some specimens only with a faint wash of ash above. Nape and interior surface of ears white, except as stated; the latter tipped with black.

In winter, pure white all over, with a yellowish tinge. Ears white, tipped with brown; the external and internal bands rusty gray. Fur on the ears and elsewhere much longer and fuller than in summer. Fur on the upper part and sides pure white on the basal half.

Missouri river, at Fort Union. No. 29 was obtained on Burnt river, of Snake river, O. T., on its left bank, one hundred miles north of Fort Boisé. It was a male, killed October 5; weight, $6\frac{1}{2}$ pounds; stretch, $38\frac{1}{2}$; tip of snout to end of tail, $25\frac{3}{4}$; tibia, 6; femur, 5; heels to end of toe, $5\frac{3}{4}$; from shoulder joint to tip of toes, 10.

This species is supposed to turn white in winter.

LEPUS CALIFORNICUS, Gray.

California Hare.

Lepus californicus, Gray, Charlesw. Mag. N. H. I, 1837, 586, (named only in Pr. Zool. Soc. Lond. IV, 1836, 88.)
Aud. & Bach. N. Am. Quad. III, 1853, 53; pl. cxii.
Baird, Gen. Rep. Mammals, 1857, 594

Sp. Ch.—Size large. Ears and hind feet much longer than the head, (the ears longest.) Tail as long as the head. Limbs elongated; not very densely furred. Fur rather soft. Upper parts light cinnamon and black. Sides of the body anteriorly, chest, and outer surfaces of limbs cinnamon, with a slight mixture of black. Under parts whitish cinnamon on the median line, darker externally and on the inner surfaces of the limbs. Tail dull cinnamon; the upper part and a line running up a short distance on the rump, black. Extremity of the dorsal surface of the ear, with the adjacent edges, black. Internal and external bands, dusky; rest of the dorsal surface of the ear, with the posterior edge, fulvous white; rest of the external surface, with the anterior fringe, pale cinnamon. Under surface of the head lighter than the chest. Bases of the hairs and fur above, grayish white; below, white; on the sides, light plumbeous. Nape, dusky grayish.

Fort Jones, California, (70.)

? LEPUS CALLOTIS, Wagler.

Jackass Rabbit; Texas Hare; Black-tailed Hare.

Lepus callotis, Wagler, Nat. Syst. Amph. 1830, 25.—Ib. Isis, 1831, 511.
Aud. & Bach. N. Am. Quad. II, 1851, 95; pl. lxiii.
Baird, Gen. Rep. Mammals, 1857, 590.

Sp. Ch.—Rather smaller than the European hare. Ears very long and broad; nearly one-third longer than the head and one-fifth longer than the hind foot. Hair on the buttocks short and close. Color above, yellowish gray, blotched and lined with black. Upper surface of tail and central line of rump, black; tail beneath, grayish white. Sides of rump, clear ash gray. Legs, ashy. Nape, black, (sometimes whitish?) Beneath, dull whitish, with a yellowish brown color on the throat. A light ring round the eye. Tip of the posterior surface of the ear black.

Boisé river, Oregon Territory, September 27, 1854.—27, 28.

No. 27.—Male; September 27th. Dimensions.—Stretch, $26\frac{1}{2}$. Fore arm, $3\frac{3}{4}$; tibia, $5\frac{1}{4}$; femur, $4\frac{1}{4}$. Ear from plane of occiput, $5\frac{1}{4}$. Heel to end of toes, $4\frac{7}{8}$. From snout to tip of tail, $22\frac{1}{2}$. From shoulder joint to tip of fore foot, 8 inches.

These hares are exceedingly abundant on the left bank of the Boisé river. They are so numerous, that our command of 60 men subsisted on them for nearly a week. In a short ride of an hour's duration to see 30 near to the trail was nothing remarkable. The natives (Diggers) make garments by sewing many of their skins together. This hare breeds in great numbers on the vast sage plains to the south of Boisé river, between it and Snake river. They are said to turn white in the winter. The flesh is rather bitter, owing probably to the sage on which it feeds.

LEPUS ARTEMISIA, Bachman.

Sage Rabbit.

Baird, Gen. Rep. Mammals, 1857, 602.

Sp. Ch.—Similar to the common rabbit, *Lepus sylvaticus*, but smaller and grayer.

Fort Union, Nebraska.

Fort Dalles, Oregon Territory, 1855.—35, 50.

50.—March 2. Length to root of tail, 12 inches; tail to end of vertebræ, 2.00; of hairs, 2.50.

35.—January 12, 55. Under surface of tail, I am told by Indians, is white; that of this specimen was lost. It does not turn white in winter. Name, in dialect of the Wascos, *La-Lik*.

Dimensions.

	Inches.	Lines.
Length from nose to root of tail	15	.....
Heel to point of longest nail	3	8
Height of ear above plane of crown	3	3
Ear to point of nose	2	10
Tail vertebræ, about	1	4
From olecranon to end of longest nail	4	2
Extreme stretch between fore and hind toes	24	.....

Ear as long as the head. Small intestines; about 6 feet 9 inches long; stomach, about 3; cæcum very long. Ileum contained 4 tæniæ.

ALCE AMERICANA, Jardine.

Moose.

Baird, Gen. Rep. Mammals, 1857, 631.

Horns were obtained from some point north of Steilacoom.

CERVUS CANADENSIS, Erxleben.

Elk.

Baird, Gen. Rep. 1857, 638

A portion of a skull obtained in Washington Territory.

CERVUS LEUCURUS, Douglas.

White-tailed Deer.

Cervus leucurus, Douglass, Zool. Jour. IV, Jan. 1829, 330.
Richardson, F. Bor. Am. I, 1829, 258.
Aud. & Bach. N. Am. Quad. III. 1853, 77; plate cxviii.
Baird, Gen. Rep. Mammals, 1857, 649.
Long-tailed red deer, Lewis & Clark.

Sp. Ch.—Horns and gland of the hind legs as in *C. virginianus;* tail, appreciably longer; hoofs, long and narrow; fur, compact. General color above, in autumn, yellowish gray, clouded and waved, but not lined with dusky. Chin, entirely white, with only a small dusky spot on the edge of the lip. Ears gray, with a basal white spot behind. Anal region and under surface of the tail, but not the buttocks, white. Tail, reddish above, without exhibiting any dusky.

A pair of horns obtained from Whidby's Island.

CERVUS COLUMBIANUS, Rich.

Black-tailed Deer.

Cervus macrotis, var. *columbianus*, Richardson, F. B. Am. I, 1829, 255; pl. xx.
Cervus columbianus, Baird, Gen. Rep. Mammals, 1857, 659.
Cervus lewisii, Peale, Mammalia and Birds U. S. Ex. Ex. 1848, 39.
Cervus richardsonii, Aud. & Bach. N. Am. Quad. II, 1851, 211.—Ib. III, 1853, 27; pl. cvi.
Black-tailed fallow deer, Lewis & Clark.

Sp. Ch.—About the size of *C. virginianus*, or less. Horns doubly dichotomous, the forks nearly equal. Ears more than half the length of the tail. Gland of the hind leg about one-sixth of the distance between the articulating surfaces of the bone. Tail cylindrical, hairy and white beneath; almost entirely black above. The under portion of the tip not black. Winter coat with distinct yellowish chestnut annulation on a dark ground. Without white patch on the buttocks. There is a distinct dusky horse-shoe mark on the forehead anterior to the eyes.

Steilacoom, W. T., 1856. (90.)

APLOCERUS MONTANUS.

Mountain Goat.

Ovis montana, Ord, Guthrie's Geography (2d Am. Ed.) II, 1815, 292, 309.—Ib. J. A. N. Sc. I. 1, 1817, 8.
Aplocerus montanus, Richardson, Zool. of Herald; Fossil Mammals, II, 1852, 131; pl. xvi–xix. Osteology.
Baird, Gen. Rep. Mammals, 1857, 671.
Baird, Rep. U. S. Pat. Off. Agricultural for 1851, (1852,) 120; plate. (From Rich.)
Aud. & Bach. N. Am. Quad. III, 1853, 128; pl. cxxviii.
Rocky Mountain Sheep, Jameson, "Wernerian Transactions, III, 1821, 306."
Mountain Goat, Mountain Sheep, White Goat, &c. Vulgo.

Sp. Ch.—Entirely white. Horns, hoofs, and edge of nostrils black. Hair long and pendant. A beard-like tuft of hair on the chin.

Three specimens were obtained in the Cascade mountains north of Mount Rainier, by Lieutenant Nugen, United States army; another from the Upper Nisqually. (89.)

CHAPTER III.

REPORT OF DR. GEO. SUCKLEY, U. S. A., AND GEO. GIBBS, ESQ.

SCALOPS TOWNSENDII, Bach.

Western Mole.

BAIRD, Gen. Rep. Mammals, 1857, 65.

[For Sp. Ch. see chap. 2, p. 88.]

This animal is quite abundant in the vicinity of Puget Sound, and probably extends throughout those portions of Oregon and Washington Territories situated between the Cascade range and the coast. I never saw it east of the Cascades.

It is very common near Puget Sound, where I got a half dozen specimens. One, obtained alive at Muckleshoot prairie, I kept for some time in a box, upon the bottom of which was a quantity of rich black loam. When disturbed it instinctively endeavored to escape by burrowing in the earth of the box, using its long pointed nose as a wedge to pioneer the way. The excavation was performed by its broad stout hands, which, surmounted with their long sharp claws, seemed admirably adapted for the purpose. The fore paws were worked alternately as in swimming, the hind feet acting as propellers. Although the earth in the box was very soft and friable, it was, nevertheless, a matter of astonishment to see how rapidly the little creature could travel through it. When he slept it was in a sitting posture, with the body curled forward and the neck strongly flexed, so that the nose rested between the hind legs. He thus assumed a *ball* shape, evidently his usual natural position when asleep.

This mole, being subsequently killed, was duly measured, and the measurements recorded in my note book, as follows:

No. 85.	♂.	Length from nose to base of tail	6.75
		Length of tail	1.50
		From occiput to tip of nose	2.00
		Length of hand, including middle nail	1.10
		Extreme reach from longest claw of hind foot to ditto of fore foot	7.87

Penis concealed in its sheath. Glans flattened. Eyes scarcely apparent before skinning.

They live in the more rich and open grounds, making burrows near the surface resembling closely those made by the common garden mole in the Atlantic States.—S.

NOTE.—During Dr. Suckley's absence from the United States, chapter 2 of the present section was published. It was found afterwards that many notes and memoranda had been mislaid, or had, from some other cause, escaped insertion. It was therefore determined to join the unpublished material with a number of valuable notes which had been kindly furnished by George Gibbs, esq., and to print the whole, as thus connected, in the present chapter. Care has been taken to avoid useless repetition of any of the matter which appears in chapter 2, but when necessary, a reference is made to the page in the first report, as well as to that of Professor Baird's general report on the mammals of the routes of the different surveys.—S.

CONDYLURA?

Star-nosed Mole.

In 1852 I saw a very large star-nosed mole, which had been killed at Orleans bar, on Klamath river.—G.

Dr. Cooper saw at Vancouver, W. T., in 1853, a decayed specimen, which had the appearance of having a radiated excrescence on the nose; but being crushed and nearly destroyed, the specimen was unfit for preservation.

FELIS CONCOLOR, Linn.

The American Panther; Cougar; California Lion.

Felis concolor, Linn. Mantissa, 1771, 522; pl. II.
Baird, Gen. Rep. Mammals, 1857, 83.
[For Sp. Ch. see chap. 2, p. 88.]

The cougar, or, as it is frequently called, "California lion," is common in Oregon and Washington Territories. They are quite abundant in the mountains of the Klamath. The Indians there sew two skins together, and wear the robe thus formed as a blanket, the tails trailing behind. Two skins of the young panther were obtained by me from a man at Steilacoom. They are marked much like the wild cat, but have a longer tail. The living animals were about the size of weaned kittens.—G.

Note.—I have several times heard of some large animal of the cat kind said to differ from the cougar. One was reported to have been seen in California by some mining acquaintances I made there. It was described as stouter than the cougar, *deep chested*, with a *dark tawny mane!* Lately a very intelligent man, Mr. Samuel Woodward, of Shoalwater bay, W. T., informed me that he had seen in that neighborhood an animal standing higher upon its legs than a cougar, with erect ears and a *short tail*. The Indians of the Willamette have a story of some terrible animal inhabiting the woods bordering the Columbia on the south, which is not a cougar. It may be that there are imaginary differences, but the subject deserves investigation. Perhaps these animals are straggling specimens of the northern lynx.—G.

The cougar is quite abundant in the thickly wooded sections of Washington Territory, near the coast, being especially abundant on some of the heavily timbered river valleys, such as that of the Cowlitz, Chehalis, Nisqually, and others. Near Fort Steilacoom a few are killed every year, occasionally quite near the garrison. There have not, as yet, been any instances in that vicinity of human beings having been attacked by them. They are, however, destructive to young calves and other small animals. They are said to utter shrill screams, and at times loud *whistling* sounds, at night. Perhaps these, when much heard, proceed from the amatory conflicts and spiteful sanguinary courtships which, it is fair to suppose, exist as much among them as with their cousins, our domestic dependants.

I am indebted to Major James Tilton, United States surveyor general of Washington Territory, for the present of the finest and most complete skin of this species I have ever seen from the northwest coast. It is now in the collection of the Smithsonian Institution.

Townshend speaks of the indication of a second and nearly allied species on the Columbia. His opinion is based upon a peculiar skull and one foot of an animal he there obtained. Perhaps this may have belonged to the "terrible animal" to which Mr. Gibbs alludes. The

kitten skins obtained by Mr. Gibbs were got in August; and it is fair to suppose that they were littered in July. The Indians speaking the Nisqually dialect call this animal *swo-wah.*—S.

LYNX FASCIATUS, Raf.

Western Wild Cat; Red Cat.

Lynx fasciatus, Raf. Am. Month. Mag. II, Nov. 1817, 46.
Baird, Gen. Rep. Mammals, 1857, 96.
Tiger Cat, Lewis & Clark, Travels II, 1814, 167.
[For specific characters in detail of this species see chap. 2, p. 90.]

The western wild cat is abundant in the thickly wooded districts bordering the lower Columbia and Puget Sound. Lewis and Clark, in speaking of this animal, call it the "tiger cat," and say that it is much larger than that of the States, with much finer fur. They remark that the Indians made robes out of *four skins.*

The name of this animal in Yakima (a dialect of the Walla-Walla language) is *Pitzeni*, and in Nisqually *Pish-pish.* The older settlers say that there are two kinds of wild cat in the neigh borhood of Puget Sound—one being the species now under consideration, the other called the *brindled cat.* I saw a specimen of the *L. fasciatis* at Olympia in 1856. It was about twice the size of the common wild cat. Tail short, ears black, with gray spots upon them like "thumb marks." The Skokomish Indians call it *Chebuk.* The Indians say that there are *two* cats besides the cougar, thus corroborating the statements of the settlers. A very intelligent settler, a keen hunter, and an observing man—Judge Ford, of the Chehalis river—says that there is a *third* kind, which is *spotted black and white*, and is much more slender than the common wild cat of the country.—G.

The barred lynx is a very abundant species in the thickly wooded districts of Washington Territory; so much so that I obtained a half dozen specimens during the last year I resided there. One of these (a female) was shot in a barnyard near Fort Steilacoom. It and a companion were standing near some calves, whisking their tails, and apparently bent upon mischief. It is not often that they attempt to take such large prey; but usually they content themselves with young pigs, or other small delicacies that may fall in their way near the settler's home. When not depending upon what can be stolen from the farmer or shepherd, they subsist upon young fawns, rabbits, ruffed grouse, small birds, squirrels, &c.

There *may* be two kinds of wild cats in the Territory north of the Columbia, the present species and the Hudson Bay lynx. The latter Townshend says inhabits Oregon. The Indians about Puget Sound, when asked, always say that there are *two lynxes* or *wild cats.* One of these they call Bellopes; but the *Bellopes* is the raccoon, (*Procyon hernandezii.*) Undoubtedly these natives have not studied comparative anatomy very extensively. After removing the Bellopes and asking how many other kinds of wild cats exist in their country, they answer *only one*, pointing to a skin of the red cat of the present article. The kind spoken of by Mr. Gibbs as having been seen by Judge Ford may perhaps be a partially grown cougar, which we know are spotted when young; or it may be a young individual of the Hudson Bay lynx, or even a new and undescribed species. I have friends on the lookout for the animal, so that, if at all abundant, I shall probably ere long receive a specimen.

The Indians eat the red lynx whenever obtained. Upon their recommendation I tried a *steak* broiled, but have no hesitation in pronouncing the creature not good. A prominent mark of this species is the gray "thumb mark" on the ears.

Measurements of specimens.

No. 121.—Fort Steilacoom, October 10, 1856. Female.

From nose to base of occiput	7.00 inches.
From nose to base of tail	33.50 "
Tail vertebræ	6.87 "
From base of tail to end of hairy tip	7.50 "
Span of fore and hind foot—extreme stretch	65.00 "
Easy girth behind shoulders	18.25 "

This cat was fat and in good order.

Another. No. 114 was a male killed in a farmer's yard, near Fort Steilacoom, August 8, 1856. It had committed many depredations upon the poultry and young pigs of the establishment.

From occiput to nose	6.50 inches.
From nose to base of tail	31.50 "
Tail vertebræ	6.75 "
Tail to end of hairy tip	7.25 "
Span of fore and hind legs—extreme reach	54.00 "
Fore arm, about	6.00 "

Another. Male; Port Townshend, December 18, 1856. No. 134.

From nose to occiput	7.25 inches.
From nose to base of tail	32.00 "
Tail vertebræ	8.00 "
Tail to end of hairy tip	8.50 "

The locality from whence this specimen was obtained shows that the range of the species extends on both sides of Puget Sound, and among the spurs of both the Cascade and Coast range of mountains.—S.

Note.—For several skins of this lynx, and for many other scientific as well as personal favors, I am indebted to my friend the popular and highly esteemed secretary of Washington Territory, his excellency the Hon. Charles H. Mason.

CANIS OCCIDENTALIS, var. GRISEO-ALBUS.

Gray Wolf.

Baird, Gen. Rep. Mammals, 1857, 104.

Sp. Ch.—Color of various shades, from gray to white. Some skins are much tinged with brown.

The Gray Wolf occurs on the Clatsop Plains, near the mouth of the Columbia, and also upon the Nisqually Plains, Puget Sound. It attains a very large size, and is too much for any single dog. It is called by the Chinooks Ileakhum, and is the Spilyer of the Yakimas.

A black wolf was seen by me in the mountains between Scott's and Shasta valleys, in northern California, in 1851. Several were together. A "black wolf," perhaps the same, perhaps the *C. nubilus*, or "dusky wolf," is found on the Nisqually Plains, Puget Sound. Some skins are grizzled.—G.

Owing to the variety in the shades and colors of the wolves of Oregon, the settlers at the Dalles, mistaking varieties for species or "kinds," consider that there are more species than the examination of many skins in the Smithsonian collection seems to justify.

There is considerable difference of opinion among the white inhabitants as to the number of

these species. Some make four species: two *large* or mountain wolves, and two *small* or coyotes. The mountain kinds are the black (probably *Canis nubilus*) and the red, (most likely the *Canis occidentalis*, which frequently is tinged with ferruginous.) Whether the "*black* wolves" are *black*, I consider doubtful. Settlers, however, have positively assured me that they have seen wolves "*perfectly black.*" Frequently the black hairs on the back of the *Canis occidentalis*, seen from a distance, may, in certain reflections, cause the animal to have a general dark or black appearance. This would be the case with the wolf having such a skin as the one in my collection marked 47.

A few memoranda concerning this species, made in connexion with the skin last mentioned, (47,) may be found in my partial report, chap. 2, p. 90. They are exceedingly numerous in Oregon and Washington Territories, from the Cascades to the Rocky mountain divide, and probably extend much further north, east, and south. They are sparingly found west of the Cascades, occurring, according to Mr. Gibbs, on the Clatsop Plains, and have been obtained by me from the elevated plateau at the western base of the Cascade mountains, upon which Muckleshoot prairie is situated.—S.

CANIS OCCIDENTALIS, var. NUBILUS.

Dusky Wolf.

BAIRD, Gen. Rep. Mammals, 1857, 111.

[For synonymy and specific characters see work last quoted; also chap. 2, p. 90.]

The skin obtained by me of this species (or variety?) was from the Nisqually Plains. Formerly this wolf was quite abundant in that vicinity, much to the detriment of the sheep of the Puget Sound Agricultural Company, but, of late years, owing to the persuasive influence of strychnine, they, together with the wolf-like Indian dogs, have become quite scarce.—S.

CANIS LATRANS, Say.

Prairie Wolf; Coyote.

BAIRD, Gen. Rep. Mammals, 1857, 113.

Coyotes, apparently identical with the prairie wolf of the plains on the Platte river, I saw in great numbers in Scott's valley in 1851. I also shot one high up in the mountains of Eel river, in California, far from the coast; and in 1854 I again met with them in the Yakima valley, in Washington Territory, north of the Columbia and east of the Cascade mountains. The Chinooks call it Italipus, and believe it to be a sort of demon or deity.—G.

The *coyote* is common in central Oregon, where it subsists on small game, carrion, &c., but, on the vast desert plains of the interior, more especially upon the dead salmon washed up on the shores of the rivers and streams. At Fort Dalles they are very numerous. There, in 1854, an individual, apparently *rabid*, entered a stable and bit a horse in the nose. The horse was, in a short time, taken with every symptom of hydrophobia, and in a few days died. In 1853, during the small-pox epidemic among the tribes north of the Columbia, the natives, frightened, left their dead unburied. These were devoured by the coyotes, who shortly became afflicted with a terrible skin disease, in which the hair fell off, and the whole surface of the body became covered by scabs and putrid sores, which, irritated by the sun, wind, and sand, were a dreadful annoyance to the miserable brutes, who undoubtedly perished in great numbers.

The double voice of the coyote, by which one single individual can make noises as if several are barking or yelping at once, is a singular peculiarity, which is well known to mountain men.—S.

DOGS.

The dogs of the Indians on the Pacific coast differ greatly among themselves. Some common kinds are believed to be a cross of the coyote. On the Klamath is a dog of good size, with a *short tail.* This is not more than six or seven inches long, and is bushy, or rather *broad*, it being as wide as a man's hand. I was assured they were not cut, and I never noticed longer tails on the pups. They have the usual erect ears and sharp muzzle of Indian dogs, but are (what is unusual with Indian dogs) often *brindled gray.* Throughout Oregon the native dog is largely intermingled with imported dogs; but the Clallams, on Puget Sound, have a white dog, with very soft hair, which is sheared like the wool of sheep, and of which they make blankets. The fur or hair is at present generally intermixed with the ravellings of old English blankets to facilitate twisting with yarn. These are stretched over a frame and then interwoven, leaving a fringe (when finished) where the ends are separated.—G.

NOTE.—I sent to the Smithsonian one "dog's wool blanket," made of this material, and one of dog's wool and duck feathers mixed. All the Clallam dogs that I saw were *pure white;* but they have the sharp nose, pointed ear, and hang-dog, thievish appearance of other Indian dogs.—S.

The question of intermixture of the dog and coyote is, I suppose, an unsettled one; at least I do not know whether naturalists admit the perpetuation of the hybrid. It is, however, a matter of popular belief.

Lewis and Clark speak of the dogs as being remarkably small. They *are* much smaller than the Sioux dogs; ears erect and pointed like the wolf; hair short and smooth, except on the *tail*, where it is long and straight, like that of an ordinary cur; head long; nose pointed; eyes small; colors, parti-colored, black, white, brown, and brindle predominate, (I have noticed brindle principally in California.) None of the Oregon Indians eat their dogs; they use them for driving elk and deer.

I met one peculiar looking dog on Eel river, in the interior of northern California, among very wild Indians. It had *short* legs and long body, *like a turnspit.*—G.

The Indian dogs about the Dalles of the Columbia are so varied in appearance that no *special* description can be given. We might, however, make two types. The *large*, (yellow or brindled,) about the size of a foxhound, but much more slender, and the *small*, resembling the "*turnspit kind*," of which Mr. Gibbs speaks. The latter are generally white, or spotted liver and white, or black and white. This kind is kept more as a playmate for the children and a pet for the women. There are besides all sizes and colors, the result of crossing with each other and with imported animals.

The native dogs of Oregon subsist well upon fish, which they even do not hesitate to eat *raw.* Salmon, which is their common food, will make any blooded dog from the States very ill; scarcely one dog out of ten recovers. This "salmon sickness," as it is called, attacks the dog but *once.* It may, after all, be nothing more than the common dog *distemper.*—S.

VULPES MACROURUS, Baird.

Western Fox.

Vulpes macrourus, BAIRD, in Stansbury's Rep. June, 1852, 309.
IB., Gen. Rep. Mammals, 1857, 130.
[For synonymy and sp. ch. see chap. 2, p. 91.]

Foxes are very numerous near Fort Dalles, Oregon, and are apparently all of the long-tailed species. Good specimens are contained in my collection, marked 25, 33, 34. In examining a

collection of 25 skins of the red or common variety in the possession of a trader, I noticed that scarcely two could be found in which the tints and shades of color were precisely alike, although all conformed to one general plan of coloration, and were evidently of one and the same species.

Owing to the diversity produced by the three varieties—*red*, *cross*, and *silver*—with intermediate grades of all shades, there is much confusion among the settlers at the Dalles as to the number of *species* which exist. In all probability there is but *one*, varied in color, however, as above.

A very good typical specimen of this species (excepting its small size, it being a young male scarcely grown) is the one whose measurements are given in chapter 2, p. 91.

On the Columbia well dried, good skins can be readily purchased for 25 cents apiece, and in the way of trade are even bought by the storekeepers for much less. They are principally taken in traps or killed with strychnine.—S.

VULPES MACROURUS, VARS. DECUSSATUS AND CINEREO ARGENTATUS.

Silver Fox, Black Fox, and Cross Fox.

BAIRD, Gen. Rep. Mammals, 1857, 127 and 128.

The Hudson Bay Company's traders think that the different foxes hybridize largely, and that in this manner the diversity of fur found in the "cross" and "silver" varieties is produced.—G.

Specimens of both these varieties were obtained by me at Fort Dalles, Oregon. I say *varieties*, because I entertain no doubt upon the subject. Mr. Sinclair, who for many years had been engaged in the fur trade, and in 1855 residing at the Hudson Bay fort at Walla-Walla as officer in charge of the post, a man that I can vouch for as a reliable, intelligent gentleman, assured me that he has seen *in the same litter of young foxes individuals of the three varieties—red, cross, and silver-gray.*

The silver-gray variety is at times so dark as to give the fox an entire black appearance. Nathan Olney, esq., at the Dalles, told me that he had once seen one of these in that vicinity which was *completely black*, with the single exception of the snow-white tip to its tail, so common to all of the species.

On the other hand, the Wasco Indians say that the silver-gray is a *distinct* fox; that the *dog, or male*, is of the silver color, the *female being reddish.*—S.

VULPES (UROCYON) VIRGINIANUS.

Gray Fox; Kit Fox.

BAIRD, Gen. Rep. Mammals, 1857, 138.

[For Sp. Ch. see chap. 2, p. 91.]

A very handsome light-gray fox, smaller than the red fox, is common on the Klamath river, and occurs also in Oregon, as I have seen them from the Dalles. I shot one on Salmon river, California, which had been yelping for several nights in succession around my cabin. The fur of this species is not so fine as that of the silver-gray, but is very showy.—G.

The only skins of the gray fox which I obtained on the Columbia were those alluded to in my partial report in chapter 2, p. 91, of this volume. They were found among some rubbish in a closet at Fort Vancouver, and their history was wrapt in obscurity. They had probably been obtained from southern Oregon. The Des Chutes Indians told me that it is found in the Cascade

mountains of southern Oregon, and that it is called, in their language, (the Walla-Walla,) the *Loot-zah*.

An old trapper (M. Dofer) says that it is the "medicine wolf" of the Indians of the "Great Plains," who believe that its cry brings trouble and bad luck. It lives in burrows, like other foxes.—S.

BASSARIS ASTUTA, Licht.

Civet Cat; Raccoon Fox.

BAIRD, Gen. Rep. Mammals, 1857, 147.

The ring-tailed bassaris, often called raccoon fox, is common in California, where the people tame it. When domesticated it is said to kill rats and mice like a cat. I could get no distinct account of its habits from the natives, as I could only communicate with them with difficulty. In 1852 I found their skins quite common on the lower Klamath river, where they appeared to be considerably valued by the Indians, and are made into "breech-clouts," &c., by them.—G.

MUSTELA PENNANTII, Erxl.

Fisher; Black Cat.

[See chap. 2, p. 92.]

The skin of the fisher is much prized by the Klamaths for quivers. The length of the body of the full-grown animal is about two feet long; form slender; fur black and rather fine; claws much curved and white.

Lewis and Clark say that the black fox, or fisher, (an animal jet black, except a white spot on the breast,) "climbs trees after squirrels, raccoons," &c.—G.

Found in the Cascade and Blue mountains. The Indians who hunt in those ranges are fond of making quivers of the skins of this animal.—S.

PUTORIUS RICHARDSONII, Bonap.

Richardson's Weasel.

Futorius Richardsonii, BP. in Rich. Zool. Beechey's Voyage, 1839, Mammalia, 10.—BAIRD, Gen. Rep. Mammals, 1857, 164.

[See chap. 3, p. 93.]

The specimen of Richardson's weasel, sent by me from Fort Steilacoom to the Smithsonian collection, and of which measurements are given in my partial report, (see chapter 2, page 93,) was obtained from Mr. Gibbs' farm, *Chet-lah*, near Fort S. It was killed among some logs and fallen trees on the 18th of August, 1854, and kindly sent to me by Mr. Gibbs. The animal had a pungent, acrid, musky odor, the result of either the emission of some secretion of the anal glands or from the discharge of urine during its death struggles. There is a slight typographical error in the measurements given on page 93. The girth behind the shoulders should read $3\frac{1}{4}$ inches instead of $3\frac{3}{4}$ inches. The chest, being readily compressible, would allow its passage through any hole which would admit the creature's head. This I believe is generally the case with all species of the genus.—S.

PUTORIUS LONGICAUDA, Bonap.

BAIRD, Gen. Rep. Mammals, 1857, 169.

[See chap. 2, p. 93.]

This weasel, mentioned by me in the partial report, (chapter 2, page 93,) was obtained in Nebraska, on the valley of Milk river. In the incomplete report above mentioned some

careful measurements in detail of this individual were omitted, which make my excuse for again introducing the animal, as I can throw no light upon its habits beyond that it was killed in a cotton-wood forest on the banks of the river.

Measurements of specimen.

Length from nose to base of tail	11.00	inches.
Caudal vertebræ	5.50	"
Tail to end of hairy tip	6.60	"
Girth around ears	4.60	"
Girth of thorax behind shoulders	4.00	"
Girth of loins	4.00	"
Length of forearm from end of olecranon	1.12	"
Length of femur	1.40	"
Length of tibia	1.25	"

S.

PUTORIUS VISON.

Common Mink.

[See chap. 2, p. 93.]

The mink is common throughout our northwestern Territories. They were obtained by me from the Rocky mountains, from the vicinity of Fort Boisé, in central Oregon, and from Puget Sound. I found them most abundant in the neighborhood of the latter, being common on both the shores of fresh water lakes and those of the salt sound itself. They are almost as aquatic in their habits as the otter and the muskrat. One which I shot near Fort Steilacoom was swimming in a fresh water lake, and at first was taken by me for one of the latter animals. On some of the islands of Puget's Sound, and upon those between Bellingham bay and Vancouver's island, they are very numerous, and are said in such localities to *subsist almost entirely upon shell-fish.*

Within a few years past the fur of minks has come extensively into fashionable use, and in consequence their skins have risen several hundred per cent. in value.—S.

LUTRA CALIFORNICA, Gray.

Californian Land Otter.

BAIRD, Gen. Rep. Mammals, 1857, 187.

The land otter is becoming more abundant in Oregon and Washington Territories since the decline of the fur trade. This animal is called by the Yakima Indians *nook-shi.*—G.

I obtained several land otter skins from the Puget Sound region, which were killed near White river, in the Cascade mountains. They are abundant on the streams of the Cascade mountains, and, as Mr. Gibbs observes, are increasing in numbers. My skins were, unfortunately, lost on their passage to Washington city.—S.

ENHYDRA MARINA, Fleming.

Sea Otter.

BAIRD, Gen. Rep. Mammals, 1857, 189.

The sea otter extends south along the coast of California to some distance at least below Cape Mendocino. They are abundant at Port Orford, Oregon, and a few are taken at the mouth of the Columbia.—G.

This animal, according to the officers of the Hudson Bay Company, are leaving the coast, being found now in much smaller numbers than formerly. They fancy that the majority have gone to the Japan and Russian coasts. The few now obtained by the company are generally from Fort Simpson, on the coast of Russian America, where it is still rather plentiful. They are found so abundantly near Cape Mendocino, and along the coast between that point and Port Orford, that several companies have been organized and equipped in San Francisco expressly for their capture. The average length of the skins of full grown individuals is about 6 feet. A very fine skin which I saw in the collection of furs in the Hudson Bay fort at Vancouver, Washington Territory, measured 74 inches in length. A test of the value and compactness of the fur is, that when blown upon strongly with the breath the hairs cannot be sufficiently separated to show the least portion of naked skin at the bottom. Skins of full length, and in prime condition, cannot be purchased at the Hudson Bay storehouse for less than $100 apiece, and then only as a favor. They are in good demand in the Chinese markets, being considered among the wealthy celestials as affording the most luxurious and récherché attire.

Through the kindness of Dr. Glisan and Lieutenant Kautz, of the United States army, I obtained a sea otter skull from Port Orford, Oregon. Attached to the skull was a memorandum stating that it was that of a female two years old. This was sent to the Smithsonian collection, but I have not as yet heard from it.

The sea otter is called by the Nisqually Indians *Dah-hahtt.*—S.

MEPHITES OCCIDENTALIS, Baird.

California Skunk; Western Skunk.

Mephites occidentalis, Baird, Gen. Rep. Mammals, 1857, 194.

[See chap. 2, p. 94.]

Skunks are plentiful throughout Washington Territory, Oregon, and northern California.—G.

The California skunk is extremely abundant throughout the western portions of Oregon and its sister Territory. At the Dalles of the Columbia they are so abundant as to be a pest to the settlers. Major Rains, of the United States army, assured me that during a two years' residence at Fort Dalles he killed 33 skunks, almost all of which had been living beneath the ground-floor of his house.

At Puget Sound they are also very numerous, living frequently under the houses of the settlers, and subsisting upon offal, carrion, dead fish, or any other edible substances which chance throws in their way. They are frequent attendants upon the heaps of fish tails, bones, fins, and other offal, at the Indian salmon fisheries. They are generally nocturnal in their habits, and at those times, especially when travelling long distances, prefer the beaten roads and trails.

The skunk is thought to be a *very brave* animal by the Sioux, Blackfoot, and other wild tribes east of the Rocky mountains, and the tail of the animal, or its skin, is considered a trophy or badge of distinction, only to be worn by the acknowledged "braves" of the tribe. I am not aware whether this custom prevails among the Indians of the Pacific coast, but presume not.

I have been called upon, professionally, to order treatment for men suffering from the sudden introduction of the peculiar stinking discharge of this animal into their eyes. It is violently irritating, temporarily causing intolerable smarting, photophobia, &c., the symptoms following its introduction being very similar to those caused by the application of tobacco juice to the same delicate organs. I have usually found that washing the eyes in simple cold water is the

best treatment, and that after a short space of time the unpleasant symptoms all disappear. Have heard that bathing the eyes in weak *vinegar* and water is also very efficacious. The skunk is said to cast its anal secretion upon its bushy tail, and that, with a dexterous jerk, it then throws it upon its pursuer. The settlers say that if a skunk is lifted up by the tail, he cannot, while thus suspended, throw the secretion upon his captor. This is an experiment which I confess I have not had the hardihood to make.

A large fat skunk, carefully prepared, I saw cooking in a camp on the Blue mountains of Oregon. The meat seemed so savory that I asked the gastronomic experimenter, who owned it, to give me a piece to taste. He did so, and I, finding the creature so much to my fancy, made a hearty dinner off of it. When carefully prepared, the anal glands and "scent bag" having been completely removed, they are certainly very good eating; the slightly strong flavor resembling much that artificially given by a skilful *chef de cuisine* with onions or garlic.

The settlers on the lower part of Puget Sound say that there are there two species of skunk; one of these, the larger kind, of which specimen marked No. 125, in my collection, is an example, is the *M. occidentalis.* The other is a small species not more than one-third the size of the first. [This is probably the *M. bicolor*, Gray.] It is a very pretty animal, not striped like the other, but of a black color, mottled or spotted on the back with white, as if with digit marks of white paint. This statement is made on the authority of several respectable citizens of the vicinity, who all unite as to the truth of the facts stated. Perhaps they may be in error by taking the young of the common kind for a second species. They say that the small skunk is not often found in winter, and that it is supposed that they hibernate. Also, that the small kind climb well, like rats, and do *not often cast their odor.* Mr. Madison, a settler at the Straits of Fuca, says that the habits of the two kinds are so different that he is *sure* that they are not identical.

The frequent residence of skunk, under the ground floors of the settlers' houses has already been alluded to. Living and breeding in these situations, they keep the atmosphere always slightly stimulating to the nostrils. *Mirabile dictu!* it seems that some people becoming accustomed to the scent rather acquire a fondness for it, upon the same principle, I suppose, that certain chemists become fond of the odor of sulphuretted hydrogen! The Nisqually Indians call the skunk *skum-meoh*, and have some very amusing traditions concerning it.—S.

TAXIDEA AMERICANA, Baird.

American Badger.

[See chap. 2, p. 94.]

The badger is very common on the dry, barren plains on the Yakima river, Washington Territory, also on the timberless mountains between the Yakima and the Columbia. I have never seen any badgers *west* of the Cascade mountains. It is called the by Yakimas *Weehthla.*—G.

During my residence in Washington Territory I obtained but one skin of the badger, although the animal is, as Mr. Gibbs remarks, very plentiful in the open country east of the Cascade mountains. In certain sections, as, for instance, the Simcoe valley, their burrows are so numerous that it is exceedingly dangerous to ride fast lest your horse should, by stepping in one, fall, at great risk to both himself and the rider. This is also the case on the plains of the buffalo regions in western Minnesota (now Dacotah) and Nebraska. In the first mentioned Territory their burrows are inhabited in midsummer by vast numbers of a gregarious species of garter snake. I have seen at times, at the bottom of a vacated "hole," a dozen or more in a knot—the writhing excessively serpentine mass disgusting all but the naturalist.

Doctor Cooper, in his note, says that the badger has a strong "doggy" flavor, "not to mention its extraordinary toughness and leanness." The Doctor must have been unfortunate in his choice of a specimen to experiment upon. Those that I have seen are generally *too* fat, and one that I ate, in company with some Nez Percés Indians, on the southern slope of the Blue mountains of Oregon, I thought exceedingly good; so good that I allowed the savage banquet to replace my ordinary dinner.

The skin of the specimen obtained in Washington Territory was unfortunately lost on its way to the Smithsonian museum. As Professor Baird has examined skins from the west side of the Rocky mountains, and pronounced the species of both sides to be identical, I feel at liberty to give the range of the *T. Americana* in the northern sections of our country, as follows: Found sparingly in the eastern portion of Minnesota; becoming more abundant near the Missouri. From thence, after entering Nebraska, it extends almost all the way to the dividing ridge of the Cascade mountains, near the Pacific coast. Further west it does not go, at least *north* of the Columbia. I have seen it in the St. Mary's valley, at the western base of the main chain of Rocky mountains, and as far south in Oregon as the vicinity of Fort Boisé, on the Snake or Lewis river. They are most abundant (north of Utah) in the vicinity of Powder river, Oregon, and the Yakima, one of the northern tributaries of the Columbia. The specimen obtained in Minnesota was so fat that I had much difficulty in skinning it properly for preservation.—S.

PROCYON HERNANDEZII, Wagler.

Black-footed Raccoon.

Procyon hernandezii, Wagler, Isis, XXIV, 1831, 514.—Baird, Gen. Rep. Mammals, 1857, 212.

[See chap. 2, p. 94.]

How far east the black-footed raccoon extends is still a matter of some doubt. In 1855 Mr. Sinclair, a gentleman then in charge of the Hudson Bay fort at Walla-Walla, informed me that the "raccoon" does not extend north of the 50th parallel. But as Mr. Sinclair had spent the greater part of his life in the Saskatchewan and Red river regions, it is probable that his remark applied only to the *P. lotor*, the common species east of the Rocky mountains. The *P. hernandezii* is found quite abundant on Puget Sound, as far as 48° north, and probably extends along the coast to a point at least as high as the 55th parallel. This opinion the mildness of the winters of that section of the northwest coast seems to justify.

I obtained many specimens of this species while at Fort Steilacoom. They are quite abundant in that vicinity, having much the same habits as the common raccoon of the Atlantic States; taking to trees when pursued too closely by dogs; feeding and moving about occasionally in the day, but most frequently at night; frequenting the borders of ponds at night, in pursuit of frogs, dead fish, &c.; more or less gregarious in their character, and when wounded, or at night while engaged in combats or courtships, filling the air with their noisy, snarling, cat-like screams. In these and in all other habits they resemble "that same old coon" at home.

Mr. Sinclair, whose long experience in the fur trade entitles his statements to respect, gave me some interesting statistics concerning the valuable part that the fur of the raccoon takes in that lucrative business. He stated that several years ago, at one of the great regular semi-annual fur sales at London, over 730,000 raccoon skins were sold, of which the majority were

from the different private American traders and companies, only 2,000 being annually collected by the Hudson Bay Company. At the great sale mentioned they brought from 11 pence to 2 guineas each, and were collected during the previous year. They were principally in demand for the Germans and Prussians, who use them for caps, &c., &c.

The raccoon is the *bellopes* of the Nisqually Indians, and by them is considered the *second* species of *wild-cat* which inhabits their country!

A fine male *P. hernandezii* was obtained by me at Fort Steilacoom October 21, 1856. It measured as follows:

?Nose to base of tail	32.00	inches.
Vertebræ of tail	11.50	"
Tail to the tip of hair	13.25	"
Easy girth behind shoulders	13.25	"

S.

URSUS HORRIBILIS, Ord.

Grizzly Bear.

Ursus horribilis, Ord, Guthrie's Geography, 2d Am. Ed. II, 1815, 291, 299.
Say, in Long's Expd. II, 1823, 53.
Ursus ferox, ("Lewis & Clark,") Richardson, F. B. A. I, 1829, 24; pl. i.
Aud. & Bach, N. A. Quad. III, 1853, 141; pl. cxxxi.
White bear, Barton, Phila. Med. and Phys. Jour. I, 1805, 75.
Grizzly, gray, white, and brown bear, Lewis & Clark, *passim*.

Sp. Ch.—Size very large. Tail shorter than ears. Hair coarse, darkest near the base, with light tips. An erect mane between the shoulders. Feet very large; fore claws twice as long as the hinder ones. A dark dorsal stripe from occiput to tail, and another lateral one on each side along the flanks, obscured and nearly concealed by the light tips; intervals between the stripes lighter. All the hairs on the body brownish-yellow or hoary at tips. Region around the ears dusky; legs nearly black. Muzzle pale, without a darker dorsal stripe.

BEARS.

White or Grizzly; Yellow Bear; Brown or Cinnamon.

There is a great diversity of opinion whether these are the same bears under a different condition of peltry, age, &c., or not. It is certain that the young of the *grizzly* do not necessarily differ in color from the old, as I have seen gray or white *cubs* as well as old bears, and the two varieties inhabit the same districts of country. Lewis and Clark suppose them to be the same, and mention a peculiarity that I never thought of noticing, *i. e.*, their bearing the testicles in separate bags, from two to four inches apart, pendant from the belly, and further forward than those of the black bear. Both are abundant throughout California. I saw great numbers in 1851 upon the true Coast range of that State, or the one lying between Russian and Eel rivers and the Pacific. They are abundant, also, upon the "Bald Hills," between Humboldt bay and the Klamath, and on the mountains between the Klamath and Trinity rivers; in fact, almost everywhere that the oaks and manzanita (shrubby arbutus) furnish acorns and berries. Of the berries of this manzanita, which resemble, in size and character, those of the *arbutus uva ursi*, they are very fond. They also dig up the nest of the "yellow jacket wasp," which abounds in the mountains. More to the northward they become scarce near the coast. I have never heard of them on the Coast range between the Willamette and the sea. Neither are they found to the north of the Columbia, though the Chinooks have a separate name for them,

(*esiamb*,) and say that they have seen them. I do not think they exist in the Olympic range, as the skins I have seen on Puget Sound are all of the *black* bear. On the eastern slope of the Cascades north of the Columbia they are found, though but rarely.

The *grizzly bear* of California has been known to attain the weight of 1,600 pounds, and, it is said, even of 2,000, a size almost incredible. The white grizzly seems to bear the same relation to the cinnamon that our black does to the brown bear of Europe. I consider them myself as different, but they, perhaps, hybridize, which gives rise to the intermediate shades of color. The hunters have some very curious notions concerning bears generally. They say that no one has ever found a female with young in her, no matter at what season they have killed them, even when hybernating. Another is, that when the bear goes into winter quarters he contrives to stop his fundament with clay, which remains there during the whole winter, nothing passing him while asleep. In the spring the clay comes out, being first softened by a black liquid which oozes from the animal! Both these stories are evidently common hunters' opinions, having been told me by persons who have never had communication with each other.

NOTE.—Mr. Gibbs, since writing the foregoing, has communicated, in a letter to Dr. Suckley, the following additional information concerning the geographical range of the large bear.

"The *brown* bear *is* found in the Olympic range, and grows as *big as a cow!* So says Mc. N——, who brought me a fine *black bear* skin the other day, and has promised me a *brown* one. He says that the hair of the last mentioned is coarser and shorter than that of the black species."

An absurd idea, similar to the story about the bear's habit of closing his anus with a "ball of clay," prevails among the Indians at the Dalles, with the variation, however, that the ball is composed of hard pine resin!

Excepting what Mr. Gibbs states of the probable occurrence of the grizzly or the large brown bear in the Coast range, I have never received any intimation of its existence in the western part of Washington Territory; but in the Rocky mountain portion it is rather common. They are very abundant in northern Nebraska along the Missouri river; and I was told, by the half-breed hunters and guides of our exploring party, that they are found as far east as the Devil's lake, (or Miniwakan,) a large salt lake in the northwestern part of Minnesota. In California they are very abundant, and, in San Francisco, at the menagerie, I have seen nearly a dozen at a time. They were quite tame; even the largest performed various amusing tricks with the readiness and intelligence of a New Foundland dog.—S.

URSUS AMERICANUS, Pallas.

Black Bear.

BAIRD, Gen. Rep. Mammals, 1857, 225.

The common black bear is quite abundant throughout the wooded portions of Oregon and Washington Territories. In the latter they are especially abundant in the timbered districts near the coast. I obtained at Fort Steilacoom several fine skins of adults, and one very perfect skin of a cub, which was presented me by my kind friend Dr. J. B. Webber. Their habits seem indentical with those of their brethren east of the Rocky mountains.

In the Chinook jargon this animal is called *itshoot.*

J.H.Richard del

SCIURUS FOSSOR, Peale.

Western Gray Squirrel.

Sciurus fossor, PEALE, Mamm. and Birds, U. S. Ex. Ex., 1848, 55.
BAIRD, Gen. Rep. Mammals, 1857, 264.
[For description and measurements see Suckley's partial Report, chapter 2, p. 95.]

Immense numbers of the California gray squirrel exist on the Klamath river. They frequent oak groves, and the neighborhood of the bay-leaved juglans.—G.

Concerning this species I have nothing to add to what is written on page 95. It has apparently not crossed the Cascade mountains to the west, in Oregon, and it is a matter of some doubt whether the species is found at all in Washington Territory.—S.

NOTE.—Mr. Gibbs, in a letter to me, says that he has seen in a cage, tamed, a *gray tree squirrel*, not the *S. fossor*, but smaller, which had been brought from California. He saw another dead, lying on the ground in the Willamette valley.—S.

In 1853, when decending the Flathead river, a tributary of Clark's Fork of the Columbia, which meanders through the Bitter Root chain of Rocky mountains, I saw from my canoe a black squirrel ascending a tree on the bank. From some cause or another I did not obtain the specimen, and was reluctantly obliged to move on, consoling myself with the hope that I should ere long fall in with another. But in this I was disappointed. The squirrel was much of the same size and general appearance as the common black squirrel of the Atlantic States.—S.

SCIURUS RICHARDSONII, Bach.

Richardson's Squirrel.

[For Sp. Ch. and synonymy see chap. 2, p. 96.]

The Richardson's squirrel holds the same place in the Rocky mountains that the Douglass squirrel does in the Cascades. In common with the last mentioned species, they have many similarities and habits, showing a marked affinity with the red squirrel.

This species subsists principally on the seeds of the red pine of the Rocky mountains, ? *Pinus ponderosa.*—S.

SCIURUS DOUGLASSII, Bach.

Oregon Red Squirrel; Pine Squirrel.

[For Sp. Ch., &c., see chap. 2, p. 97, or Baird's Gen. Rep., Mammals, 1857, p. 275.]

The western pine squirrel is found on both sides of the Cascade mountains. It feeds indifferently on the seeds of the pine, fir, and arbor-vitæ.—G.

The Douglass pine squirrel, in the western part of Washington Territory, takes the same position that the red squirrel does in the Atlantic States, having much the same size, habits, and (excepting color) general appearance. When disturbed by the too close approach of man it manifests displeasure much like the red squirrel, by chattering, "scolding," &c. It remains active throughout the winter, and is a very abundant resident.

A fine male specimen of this species, killed at Fort Steilacoom, June 17, 1856, measured as follows:

No. 99.	Nose to occiput	2.00	inches.
	Nose to base of tail	7.50	"
	Tail vertebræ	4.50	"
	Tail to end of hairy tip	6.00	"
	Hand to end of longest nail	1.36	"

?PTEROMYS OREGONENSIS, Bach.

Oregon Flying Squirrel.

BAIRD, Gen. Rep., Mammals, 1857, p. 290; also chap. 1, p. 80.

I have heard of several flying squirrels that have been found in the Puget Sound region. One was kept alive for some time as a pet in a family residing on the Nisqually river.

Mr. Packwood, one of the oldest and most reliable settlers on Puget Sound, informed me that the animal there found is much larger than that of the Atlantic States; approaching much more the size of an ordinary gray squirrel.—S.

TAMIAS TOWSENDII, Bach.

Townsend's Striped Squirrel; Western Chipmonk.

[For Sp. Ch. and synonymy see chap. 2, p. 97, or Baird's Gen. Rep., Mam., 1857, p. 300.]

This squirrel is exceedingly abundant in the Cascade mountains and in the forest regions of Puget Sound and the lower Columbia. In habits it closely resembles its near relative the *T. quadrivittatus*, as well as the common "chipmonk" of the Atlantic. Like these species, it probably spends the cold season in torpor.—S.

NOTE.—*T. quadrivittatus*, Say, chap. 2, p. 97. This species is to be looked for on the eastern slopes of the Cascade mountains in Washington Territory, as it occurs near Klamath lake, and in the Blue mountains of Oregon. Dr. Cooper thinks that the differences noticed on page 81, chap. 1, in their cries, may indicate that those seen by him near the Yakima river were, in part at least, of this species.

SPERMOPHILUS BEECHEYI, Rich.

Calfornia Ground Squirrel.

BAIRD, Gen. Rep., Mammals, 1857, 307; also chap. 1. p. 81.

I saw the California ground squirrel in the valley of Clear Lake—a large sheet of water between Russian river and the Sacramento—and afterwards I saw them in immense numbers on the Salmon, a branch of Klamath river. They inhabit the "foot-hills" which extend down to the terraces, or, as they are called, "high bars," on the river, which are everywhere marked by their trails leading to water, which are beaten as plainly as those of deer. They are in body about the size of the grey squirrel, but shorter, their fore legs being *very* short.—General color *mottled gray*, with a *black* patch, or broad stripe, between the shoulders.

They are inveterate thieves, impudently entering the huts and tents of the miners to steal flour, bread, rice, &c. I have had large cakes of baked bread carried, or more probably *rolled*, by them from one end of my cabin to the other. To make amends, they are delicious eating; the flesh, very white and tender, resembles more nearly frog's legs than any thing else to which I can compare it. In autumn they are fat enough to fry in their own grease. I have heard that they extend as far north as the Willamette valley, but I never saw them there myself. Their tails, like those of the white-footed rat, (*Neotoma occidentalis*,) are sparsely covered with hair.—G.

SPERMOPHILUS DOUGLASSII, Cuvier.

Columbia Ground Squirrel.

[See chap. 2, p. 98.]

The Columbia "ground squirrel" is found very numerous on the open plains and the scrub oak foot-hills, at the eastern bases of the Cascade mountains. Near Fort Dalles they are very

abundant, and animals apparently identical are quite common in the Blue mountains of Oregon. No individuals of this species were observed by either Dr. Cooper or myself north of the Columbia. They hibernate during winter and are not seen until about the 1st of April, when they make their appearance on fine days. At first they are apparently feeble and still very sluggish in their movements, so that if they venture a short distance from the mouths of their burrows they are readily killed with sticks or stones. Later in the season they are quite active, and very rat-like in their movements and habits, which, however, are principally diurnal. In summer they are quite fat, and are said to be very good eating when cooked. Their burrows are entered by small round holes, which are but little larger around than the bodies of the full grown animals.

They do not burrow, like prairie dogs, in villages, at least they are not *markedly* gregarious, but seem to be governed in their choice of localities by the abundance of food. From their marked preference for oak groves I should judge that acorns form a considerable part of their sustenance.—S.

CYNOMYS LUDOVICIANUS, Baird.

Prairie Dog.

[See chap. 2, p. 99.]

In 1849 the mountaineers told me that this animal is confined to the vicinity of the waters which flow into the Missouri, and that upon crossing the water-shed and entering Oregon they are replaced by a "large squirrel," living in the rocks, which resembles the "dog," but does not "bark." The Indians, they say, make robes of its skin. Probably this latter is the Douglass spermophili which exists in great numbers on the Columbia, east of the Cascades.—G.

In crossing the continent by land, in 1853, our party found "prairie dogs" in great numbers all along its route through Nebraska, following the line of the Upper Missouri and its tributaries. They occurred in the Rocky mountains themselves, on the Dearborn river, and far up the Blackfoot Pass, on the eastern slope of these mountains, to a point not far from the "divide." They may cross and extend a *short* distance in Washington Territory, but I think that the western slope of the mountains is too heavily timbered for them.

Townsend speaks of their being found in Oregon, but this active and really praiseworthy naturalist allowed his specimens and notes to become so "mixed up," that at last, finding so many of his statements erroneous, naturalists sometimes doubt his testimony, unless further backed up by that of others. I have inquired of many old settlers and others, reliable men, none of whom corroborate Dr. Townsend's statement. In Nebraska their "towns" are situated, in many instances, long distances from water, in places where it frequently does not rain for six or eight months at a time, and where dew scarcely falls. It is for this reason supposed that they burrow sufficiently deep to reach water. One kept alive by me rapidly became tame.

Measurements of three specimens obtained on Milk river, Nebraska Territory.

	A.	B.	C.
Length from nose to base of tail (in inches)	11.50	11.00	10.75
Tail, to hairy tip	4.50	3.75	3.00
From occip. protuberance to tip of nose	2.75	----------	----------
Girth behind shoulders	7.75	----------	----------
Girth around loins	12.25	----------	----------
Girth around head, over the ears	5.33	----------	----------
Length of forearm	1.75	----------	----------
Tail vertebræ	----------	3.00	2.25

Eyes black.—S.

NOTE.—Lewis and Clark speak so positively of the occurrence of a "barking squirrel" in the plains of the Columbia, that we cannot entirely pass their statement by without notice. According to Mr. Ord in Guthrie's Geography—"These animals form in large companies like those on the Missouri, occupying with their burrows sometimes two hundred acres of land; the burrows are separate, and each possesses, perhaps, ten or twelve of these inhabitants."

Perhaps the species mentioned by them may have been, as Professor Baird suggests, the *C. gunnisonii*, or it may have been the *C. ludovicianus*. If the latter, why did it not "bark," like those on the Upper Missouri?

I have made several inquiries of individuals well acquainted with the interior of Oregon, but have never met with any who have seen the animal, and I have not heard mention of the "dog towns" spoken of by Lewis and Clark. Neither have I seen any indication of the existence of the species during my own journey over nearly the same route as that pursued by those travellers.

May not these animals have formerly existed until some disease having occurred they became exterminated? Such an epidemic, according to Mr. Gibbs, broke out among the prairie hares at Walla-Walla, nearly destroying the species in that vicinity.—S.

ARCTOMYS FLAVIVENTER, Bach.

Yellow-footed Marmot, Western Woodchuck.

BAIRD, Gen. Rep., Mammals, 1857, 343.

In May, 1855, I obtained at Fort Dalles a couple of specimens of the yellow-footed marmot. One was an old female, the other a young individual about two-thirds grown. They were brought to me alive by an Indian, who stated that he had caught them among the basaltic rocks on the Washington Territory side of the Columbia, opposite Fort Dalles, and that in that immediate vicinity they are not found on the *south* side of the river.

From the appearance of the young individual I should judge that it had been littered about the middle of February. I kept them alive for some days in a barrel. They were exceedingly wild, and apparently untameably savage. Snarling and snapping whenever the lid of their barrel was removed, at the same time uttering a very sharp shrill cry, which Mr. Nuttall would have probably described as like *chek, chek*. The skin of the female is now preserved in the Smithsonian collection; it is much worn, many of the hairs having fallen out, as if she was then changing her coat.—S.

While in the vicinity of the Straits of Juan du Fuca in 1855 I bought a quantity of skins which appear to belong to an animal the western representative of the woodchuck of the Atlantic. All the skins bought want heads and tails, having been sewed into robes. The fur, thick and soft, is of a silvery gray on the back. Tail and belly reddish brown. Tail about five or six inches long; its hair quite coarse.—G.

APLODONTIA LEPORINA, Rich.

Sewellel; the Show'tl of the Nisqually Indians.

BAIRD, Gen. Rep., Mammals, 1857, 353.

SP. CH.—Size that of *Fiber zibethicus*. Tail very short, color reddish brown. Male, length to base of tale, about 13 inches. Tail vertebræ, 1.50. Penis osseous—knobbed at the extremity and obscurely bifurcated. Testes concealed, no scrotum apparent externally. Female slightly smaller. Half-grown young of a brownish lead color.

I noticed the burrows of the show'tl in 1853, at the top of the main Yakima Pass, in the Cascade mountains, at an elevation of 3,500 feet, and again in 1854, at the Nahchess Pass in

the same mountains. The Indians trap them, and value their flesh highly as food. The Yakima Indians call it *Squallah.* Its range in the Territory is quite extensive, from high mountain elevations to near the salt water.

Colonel Simmons, one of the earliest settlers in Washington Territory, confirms the statement of the Indians that the show'tl, like the prairie dog, lives in companies. He has frequently seen them sitting at the entrances of their burrows early in the morning, and whistling something in the manner of the prairie dog.

Lewis and Clark say that this animal "mounts a tree and burrows like a squirrel." The statement that it "mounts a tree" is probably an error.—G.

In 1856 I obtained at Fort Steilacoom four specimens of the show'tl, of which three were adults. The other half-grown individual was caught June 25. It is probable that the *Aplodontia*, like many other rodents, has several litters of young during the season.

The Nisqually Indians, in their mythological traditions and obscure stories concerning the creation, say that the show'tl was the *first animal created with life.* I cannot find out whether they undergo a regular torpid hybernation. The natives say that they move about a little during the winter, but *do not become decidedly active until late in the spring.* They live in burrows, in small companies of a dozen or more, and subsist on roots, berries, &c. The Indians say that the show'tl of the Cowlitz river has a *white* breast and belly. Those at Nisqually, having the under parts dark, are said to retain the same coloration throughout the year, of which the specimens bearing the private marks 92, 93, and 94 are good examples.

They are considered by the Indians to possess high gastronomic excellencies. To ascertain this I had one roasted *secundum artem.* I found it excellent; tasting much like chicken, or perhaps more like a well roasted sandhill crane; far superior to woodchuck, neotoma, raccoon, or beaver—"*de gustibus non est disputandum.*"

Measurements of specimens.

	No. 92, male.	No. 93, male.	No. 94, female.
	Inches.	*Inches.*	*Inches.*
From tip of nose to base of tail	12.75	13.00	12.25
Vertebræ of tail	1.50	1.50	1.50
From base of tail to tip of hair	2.37	2.25	2.25
From occipital protuberance to tip of nose	3.00	Nearly 3.00	Nearly 3.75
Distance between ears	2.75	----------	----------
Height of ears posteriorly, about	.75	----------	.75
Easy girth of head, measured around the ears	7.36	----------	----------
Olecranon to wrist	2.50	----------	2.25
Middle nail of fore paw, about	.50	----------	----------
From wrist to end of longest nail	1.60	----------	1.87
Easy girth behind shoulders	7.12	----------	7.75
Extent from most projecting toe nail of hind foot to ditto of fore foot, extreme stretch	18.00	17.75	18.00
From heel to end of middle toe nail	2.12	----------	2.25
Longest whiskers, about	----------	----------	3.00

Hind feet of all the specimens very destitute of hair; fore feet more hairy. Tongue fleshy. Eyes small, (about .36 of an inch in diameter.) Cheeks and lips very thick and fleshy. Teeth

yellow. Males: Penis osseous, obscurely bifurcated, knobbed; testes concealed; no external scrotum.

They prefer to make their burrows in the rich ground near springs, perhaps partly influenced in choice of this selection by proximity to certain kinds of food. Before blankets and civilized clothing had become extensively used by the Indians of the northwest, many were in the habit of making robes and garments of the skins of these animals, by stitching them together.

Habitat.—Washington Territory, from the eastern bases of the Cascade mountains west to the ocean. ? Northern Oregon.

Three specimens sent by me to Washington are now in the Smithsonian collection. Several others, which I had preserved in alcohol for dissection, &c., were subsequently lost on their passage to the above named city.—S.

NOTE.—Mr. Gibbs writes: "I find the Lewis and Clark's name of Sewellel for *A. leporina* is an error. The Chinook name for the animal itself is *o-gwool-lal*. *She-wal-lal* (*Sewellel*, corrupt) is their name for the robe made of its skins."

CASTOR CANADENSIS, Kuhl.

Beaver

BAIRD. Gen. Rep., Mammals. 1857, 355.

The beaver and the land otter, particularly the former, have multiplied rapidly since the fur trade has become of such little value. I am told that they are now in greater numbers than they have been at any time since the first flush of the trade. The natives no longer seek them, as they get clothing from the whites, and also because the skins bring such small returns, a dollar being the present price of a large beaver skin in the stores. The Hudson Bay Company give much less for them in trade.—G.

I sent several hunters' skins of the beaver, which I had obtained in Washington Territory, to the Smithsonian museum. Beavers are very common on the small streams in the Cascade mountains, and, as Mr. Gibbs says, are apparently increasing. I saw a "beaver dam" at the outlet of a small pond near Cedar river, W. T., which in all essential particulars resembled those I saw of the same animal in the Rocky mountains.—S.

THOMOMYS DOUGLASII, Giebel.

Columbia Gopher; Pouched Rat.

[For extended synonymy and Sp. Ch., see chap. 2, p. 100.]

The pouched rat is very abundant on the Nisqually plains. It is very destructive to potatoes, while in the ground, carrying off large quantities of the smaller ones and cutting the vines.—G.

The natives at Fort Steilacoom (Nisquallys) call the gopher *mes-ka-dah*, or the thief. These animals are very abundant on the gravelly prairies near Nisqually. They prefer the richer and less gravelly portions in the hollows and swales, as well as spots along the edges of the prairie brooks where the soil is good. In fact, the settlers look upon the presence of their peculiar mounds or hillocks as a sure indication of rich soil. These mounds are about three inches in height at their summits, and from nine to fifteen inches in diameter—rarely, however, exceeded ten or twelve. Although, on account of their tendency to "cave in," they are somewhat dangerous for horses to travel over, they, nevertheless, are not near so dangerous as similar heaps thrown up by the gophers of Minnesota, which will rarely stand the pressure of a horse's foot, as they are larger, and their cavities greater than those of the present species. In Minnesota these "gopher hills" are extremely common on the buffalo

hunting grounds, where the hunters frequently suffer severe injuries from their horses falling after treading on one while at full speed.

At Fort Dalles the Columbia gopher is also quite abundant. I obtained many specimens during the spring of the year, which had been turned up in ploughing.—S.

DIPODOMYS PHILLIPII, Gray.

Kangaroo Rat.

BAIRD.—Gen. Rep., Mammals, p. 412.

The kangaroo rat is quite common on Salmon river, a branch of the Klamath.

While crossing the "Plains" in 1849 I killed, near the Platte river, a small animal belonging to the rat family, resembling the *jerboa* in the length of its hind legs.—G.

Dr. Cooper thinks that this was probably the *D. ordii*, which is very common at Fort Laramie, on the Platte, where he obtained several specimens in 1857.

The only specimen of this *Dipodomys* which I obtained in Oregon is the one mentioned in my partial report, chapter 2 of this volume. It is called *sim-tup-tup* by the Walla-Wallas, and is said by them to be abundant in the berry patches on the slopes and foot-hills of the Blue mountains of Oregon.—S.

JACULUS HUDSONIUS, Baird.

Jumping Mouse.

[See chap. 2, p. 101.]

The jumping mouse is very abundant in the vicinity of Puget Sound. I obtained several specimens in our camp on Muckleshoot prairie, about 20 miles from the sound. A temporary flooring of boards having been laid in our tents it was not long before these little creatures availed themselves of the advantages thus furnished for a comfortable residence. In habits, food, &c., they much resemble the small field mice and their relatives.—S.

HESPEROMYS GAMBELII, Baird.

Gambel's Mouse.

[See chap. 2, p. 102.]

Gambel's mouse was obtained by me at Fort Dalles, O. T., where it is considered a great pest, both by whites and Indians, on account of its passion for cutting and gnawing holes in blankets, shawls, clothing, and all sorts of woolen fabrics. It is almost impossible to secure such articles from the attacks of these little animals. The individual obtained by me, whose skin is now carefully preserved in the Smithsonian collection, gained his present obituary and scientific distinction by gnawing an enormous hole in the middle of a new uniform coat belonging to a brother officer, having surreptitiously gained access to a chest of drawers supposed to have been mouse-proof.—S.

HESPEROMYS AUSTERUS, Baird.

White-bellied Mouse.

BAIRD.—Gen. Rep., Mammals, 466.

The white-bellied mouse is met with at a very high elevation in the Cascade mountains, as well as upon the Nisqually plains, which are not more than 200 feet above the level of the sea.—G.

Quite abundant near Fort Steilacoom, but seemingly not so fond of cutting blankets, cloth clothes, flannels, and other woolen fabrics, as the preceding species.—S.

NEOTOMA OCCIDENTALIS, Cooper.

Bushy or Hairy Tailed Rat; Oregon Wood Rat; White-footed Rat.

[See chap. 2, p. 102.]

The Hairy-tailed or White-footed rat is a very large species; the tail thickly covered with hair; feet and belly white; fur dark and pretty fine; legs very short in proportion to the size of the body.—G.

When I was first at Astoria, in 1849 and 1850, they were very abundant and troublesome, carrying off immense quantities of things, transporting quarts of rice, coffee, &c., which they stored in boots and other articles hung up in the shops and warehouses. Lately they have become more scarce, having been driven off, I presume, by the ship rat. (*Mus decumanus.*)

It is, I think, like the other species of its genus, properly a *wood* rat. Lewis and Clark say that the rats which inhabit the Rocky mountains, like those on the borders of the Missouri, (the *N. cinerea,*) have "the tail covered with hair." They do not mention the white feet and large size of the Oregon neotoma, but evidently confound it with the wood rat, now so rare in the Atlantic States, of which I caught a specimen many years ago in Massachusetts.—G.

This neotoma is common in Washington Territory west of the Cascade mountains. A few years ago it was a frequent inhabitant of the houses of the settlers, and still is in such places, as the *Mus decumanus*, or the common brown rat, has not as yet reached. Upon the arrival of this latter, the much more harmless neotoma, although fully as large and stout as his adversary, soon vacates the premises, either betaking himself to his native wilderness, the forest, or to that "bourne from whence no traveller returns." In regard to the habits of this creature much of interest is related by the settlers. All confirm the accounts given by Mr. Gibbs and Dr. Cooper of their thievish practices.

I obtained a very fine male specimen at New Dungeness, on the Straits of Juan de Fuca. It was killed by Mr. Madison, a settler in that locality, who gave me the following account of their habits, which he has had many opportunities of observing: He says that when irritated or alarmed they have a habit of stamping with their hind feet like rabbits. When sitting at rest, or while feeding, they assume the peculiar sitting posture of the squirrel, but differ in the manner of carrying the tail, not curling it like the latter animal, but carrying it *straight* and *up*. They make nests or beds of soft materials, which are frequently as large as a half bushel measure. The rat *does not burrow* into this, but *lies in a depression on the top*—the whole fabric resembling a bird's nest. In dwelling houses this nest is composed of all sorts of material, embracing feathers, cotton, bits of calico, fragments of blanket, strips of cloth, shavings, and anything else that is light and soft. It is a great thief, magpie-like, stealing articles of which it can make no possible use. Mr. M. says that he has known one of these rats carry to its magazine in the course of a single night two bushels of unshelled peas, from a point 100 yards distant. He thinks that these stores are intended for winter consumption—in my opinion a very just conclusion.

My friend, E. D. Warbass, esq., of Bellingham bay, informs me that he has frequently found their "caches" of stolen articles—a very heterogenous mixture of bits of leather, buttons, nails, rice, coffee, half dollars, &c.

These "caches" are capriciously selected. At the cascades of the Columbia I was told by a storekeeper that boots, empty kettles, &c., would be chosen, and that he had found in a boot a pint of rice, together with other things which had been brought together, grain by grain, and bit by bit, by these industrious animals. Like other rats, it is principally nocturnal in its habits.

Before the advent of the brown rat skunks were their principal enemies, who still, where they exist, hunt them indefatigably, under and in the houses and outbuildings of the settlers. I was told that the specimen I obtained, of which the measurements are given below, was not so large as are sometimes seen. From the appearance of the teeth, &c., of my specimen, I judge that it was a full-grown adult.

Measurements of specimen 149, *male, killed at New Dungeness, W. T., Straits of Fuca, Jan.*, 21, 1857.

From nose to occiput	2.38	inches.
From nose to base of tail	9.75	do.
Tail vertebræ	7.12	do.
Tail to end of hairy tip	8.38	do.
Height of ear posteriorly (from plane of occiput)	1.30	do.
Hind foot, heel to end of longest claw	1.75	do.
Fore foot, heel to end of longest claw	1.12	do.

All the feet, belly, under surface of tail, and inside of legs *white*. Top of head plumbeous, brownish gray. Sides of back brownish gray; middle of back darker. Upper surface of tail plumbeous. White hairs of the flanks plumbeous at their bases; those of the middle of the breast white to their bases, but tinged with yellow on the surface, especially a spot about the size of half a dollar around the umbilicus, which is quite of a soiled yellow appearance. The settlers say this spot is persistent, being found on all specimens.—S.

ARVICOLA TOWNSENDII, Bachman.

Oregon Ground Mouse; Oregon Salt Meadow Mouse.

[See Baird, Gen. Rep. p. 527.]

Townsend's meadow mouse, also called the salt-marsh rat, is found on the tide prairies and salt meadows bordering Puget Sound. It is very common on the salt meadows along the Straits of Fuca, where, at New Dungeness, I obtained a specimen. On the potatoe fields on the rich "bottom lands" in the neighborhood of these marshes they are quite destructive to that vegetable. The marshes are very much "cut up" by narrow little trails and paths which they travel upon. These are about 2 inches wide and well beaten, looking much like buffalo trails in miniature. These mice are very numerous at Dungeness, so much so that Mr. Madison informs me that he has killed several hundred in a day while ploughing.

Measurements of specimen 150, *obtained by me at New Dungeness January* 27, 1857; *male.*

From nose to occiput, about	1.50	inches.
From nose to base of tail	5.87	do.
From base of tail to end of vertebræ	2.56	do.
From base of tail to end of hairy tip	2.68	do.

Extreme span of hind and fore feet	8.50 inches.
From heel to end of most projecting toe-nail	1.12 do.
From wrist to end of most projecting toe-nail	.56 do.

Ears hidden by the long fur of the head; they are quite large and nearly naked; whiskers very short; eyes small; teeth yellow.

NOTE.—The note published in my partial report, chapter 2, of part 2, this volume, was inserted by mistake; it was intended to apply to the other species of field and meadow mice.—S.

FIBER ZIBETHICUS, Cuv.

Muskrat.

BAIRD, Gen. Rep Mammals, 1857, 561.

I have obtained several specimens of the common muskrat from the lakes and fresh waters near Fort Steilacoom, Puget Sound. Two skins of these were sent to Washington, and are now in the collection of the Smithsonian Institution. I have seen some of their stack-like houses on lakes near Fort S. The Indians of the interior carry many muskrat skins to the Hudson Bay trading establishments, where they obtain one charge of powder and ball for each. They take the animal in traps, ammunition being too valuable to expend for them.

Indian women on the Cowlitz river use the skin of a muskrat in childbed, as a sort of "smelling salt" to assist labor.—S.

LEPUS WASHINGTONII, Baird.

Western Red Hare.

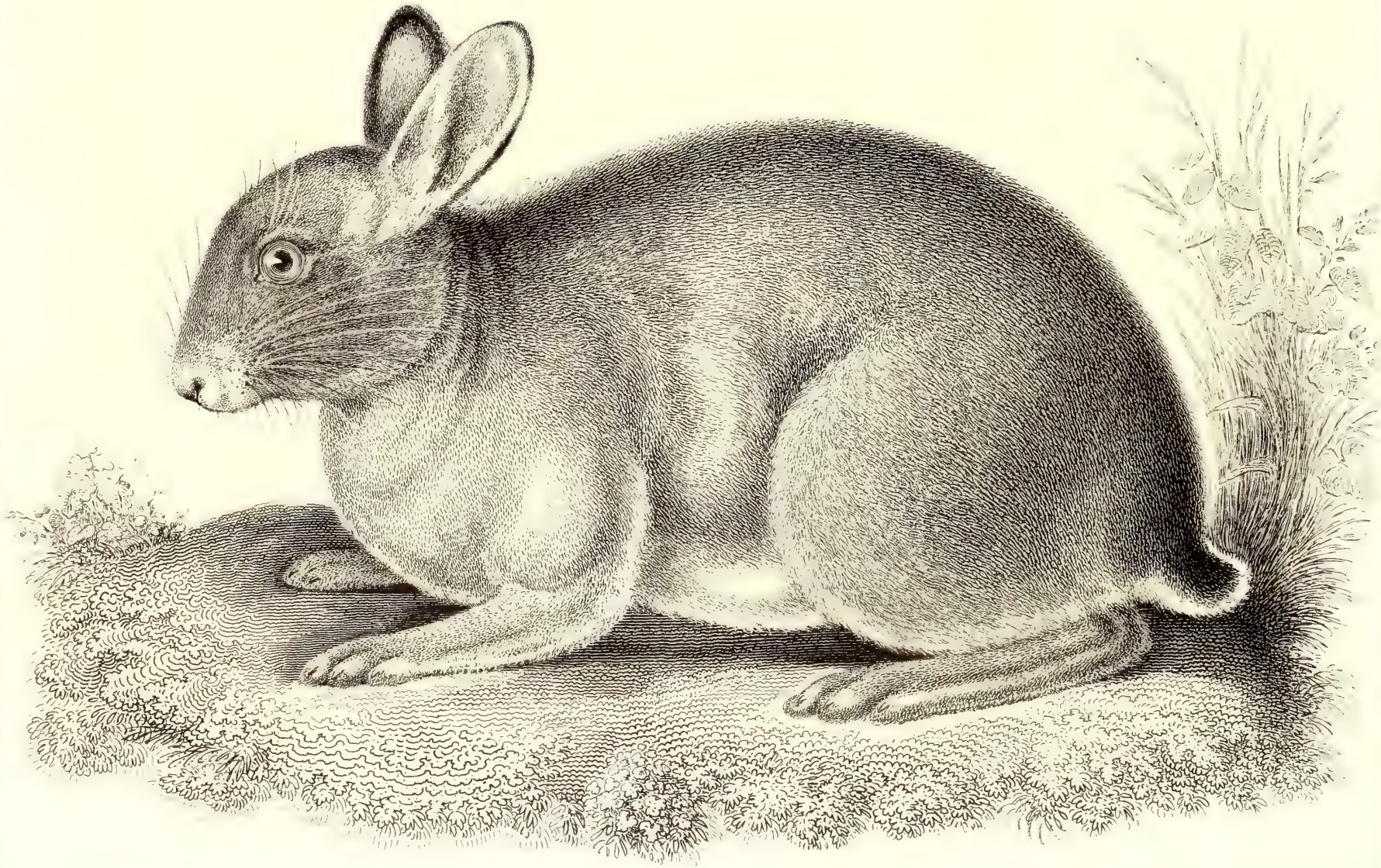
[For synonymy and description of this species, see chap. 2, p. 103.]

This species seems to replace the *Lepus sylvaticus* in the forest regions bordering the coasts of northern Oregon and Washington. One specimen (No. 142) obtained by me from British America, near the fifty-fifth parallel of north latitude, shows that this hare has a considerable range north and south. I doubt very much whether the species turns white in winter. The Indian from whom I obtained No. 142 assured me positively that it *never* turns white, and seemed to think with me that the other two skins, which were *white*, purchased at the same time, belonged to a different species. I have obtained the *Lepus Washingtonii* at Puget Sound at all seasons; those killed in mid-winter showing no trace of a white winter coat. It *may* be that some hares have the property of changing the color only during very severe cold weather, such as is rarely experienced in the vicinity of Puget Sound—the *degree of cold*, perhaps, regulating the change.

I preserved a specimen in June, 1856, which was killed on White river, near Puget Sound.

No. 104.—*Measurements.*

Head to root of tail	16.50 inches.
Tail vertebræ, about	1.60 "
Tail to hairy tip	2.50 "
Head to tip of nose	4.00 "
Height of ears from plane of occiput	3.87 "
Outstretched ears, from tip to tip	8.25 "
Folded ears project beyond nose	.50 '
Easy girth of head in front of ears	5.75 "



Length from olecranon to end of longest nail	5.36 inches.
Length from heel to end of longest toe-nail	4.50 "
From greater trochanter to end of toe-nail	11.00 "
Span of fore and hind legs, extreme reach	29.00 "
Length of longest whisker bristle	3.60 "

Chin and upper portion of throat white. A white linear streak under each nostril, below which a line of the same color as the cheeks. Whiskers, some black; the others white; the latter longest. Toe-nail "coverts" *white.* External (posterior) edge of concave surface of ear *white* upon a subterminal edging of black. Hairs of breast and abdomen white to their bases. Eyes full.

This hare is frequently found in the very thickest of the sombre Oregon forests. It also is plentiful among the scrub-oak bushes near the small lakes, on the Nisqually plains, where their well-beaten trails or "run ways" are very apparent. They are also fond of the woody edges of the prairies of that vicinity. In habits they much resemble the common wood hare of the middle States, (*L. sylvaticus.*)

I have frequently heard of a hare that is found at the cascades of the Columbia, which, the settlers say, has a *black* tail. I never obtained a specimen from that locality, although I got a skin of the Lepus Washingtonii from a point only forty miles further down the river. I apprehend that the "black-tailed hare" of the settlers is nothing more than the latter species, the dark *lead color* of the tail being mistaken by inaccurate observers for black.—S.

LEPUS CAMPESTRIS, Bach.

Prairie Hare; Townsend's Hare.

[For Sp. Ch., see chap. 2., p. 104.]

The big hare, or jackass hare of the plains, is abundant on the plains of the Columbia east of the Cascades. In 1853 we were informed by the Yakima Indians living north of the Columbia that a very fatal disease had recently prevailed among these animals, which had cut them almost all off.—G.

Townsend's hare was obtained by me from two points quite remote from each other: the Missouri river, near the mouth of the Yellowstone, and the eastern slope of the Blue mountains of Oregon!—(See notes on these, chap. 2, p. 104.)

Between the two points mentioned I saw in very cold weather, in the second chain of Rocky mountains, near Clark's fork of the Columbia, a large hare, which was *pure white*, running through the forest on the snow. I have but little doubt that the individual belonged to the present species, which tends to settle the doubt, if any had previously existed, whether the kind varies in winter. The Missouri specimen was scarcely as large as that from Oregon, and was probably immature. Measurements: forearm, 4.75 inches.; femur, 4.75; tibia, 5.50.—S.

?LEPUS CALLOTIS, Wagler.

Jackass Rabbit; Texas Hare; Black-tailed Hare.

[See chap. 2, p. 104.]

These hares are exceedingly abundant on the left bank of Boisé river, where they were so plentiful that a party of sixty men, to which I was attached, subsisted chiefly upon them for a

week. In a short ride of an hour's duration I have frequently seen as many as thirty individuals either running about the trail or sitting among the "sage" bushes on either side. Sometimes three or four might be seen at once. I presumed at the time that they were thus abundant in that immediate vicinity by reason of its proximity to water, the great drought having driven them in from the vast arid sage plains of the surrounding country. I saw none on the left bank of Snake river, and met with no hares after crossing that stream from the opposite side (at the mouth of Boisé river) until in going norththwest we had proceeded about seventy miles, when I fell in with a specimen of *L. campestris* at Powder river.

These hares breed in great numbers on the sage plains south of Boisé river, and, I was told, turn white in winter. Concerning this point there may be a mistake, my informants taking the *L. campestris* for this species.

The flesh is rather bitter, as in the case of the *sage cock*, owing probably to the artemisia upon which it feeds.—S.

LEPUS CALIFORNICUS, Gray.

California Hare.

(See chap. 2, p. 104.)

I saw a large species of hare at the head of Russian and Eel rivers, California. I also killed one of great size in the mountains, between Salmon and Trinity rivers. There is a bluish hare very common around Humboldt bay, where the Indians make blankets or robes of their skins, by cutting them into strips, which are twisted with ropes, and then stretched on a frame and woven.—G.

LEPUS ARTEMISIA, Bach.

Sage Hare.

BAIRD, Gen. Rep. Mammals, 1857, 602.

SP. CH.—Similar to the common rabbit, Lepus sylvaticus, but smaller and grayer.

Hab.—Interior of Oregon and Nebraska.

The little sage hare is very abundant in the open central region of Oregon. It is, as its name implies, especially fond of the vicinity of bushes of the so-called "wild sage," or artemisia, under which it sits motionless and invisible, in almost perfect security. Several specimens were brought to me at Fort Dalles, the skins of which were preserved, and the measurements recorded.

Measurements of specimen.

No. 50. March 2. Length to root of tail, 12 inches; tail to end of vertebræ, 2; of hairs, 2.50.

No. 35. January 12, 1855. Under surface of tail, I am told, by Indians is white; that of this specimen was lost. At the time this individual was brought to me I was told that the species does not turn white in winter. Name in dialect of the Wascos, *La-lek*.

Length from nose to root of tail	15	inches,	0	lines.
Heel to point of longest nail	3	"	8	"
Height of ear above plane of crown	3	"	3	"
Ear to point of nose	2	"	10	"
Tail vertebræ, about	1	"	4	"
From olecranon to end of longest nail	4	"	2	"
Extreme stretch between fore and hind toes	24	"	0	"

Ear as long as the head; small intestines, about 6 feet 9 inches long; stomach about 3; coecum very long; ilium contained 4 taenio.—S.

NOTE.—There are three species of hare said to occur in Oregon, to which I can gain no clue. These are the Lepus palustris, Lepus Nuttalii, and Lagomys princeps, or Little Chief Hare. The first of these, known in the Atlantic States as the *marsh hare*, is contained in Townsend's list of Oregon Mammals. Doctor T. was probably in error, mistaking the L. Washingtonii, or the present species, for it.—S.

ALCE AMERICANA, Jardine.

Moose.

BAIRD, Gen. Rep. Mammals, 1857, 631.

I believe that moose are found west of the Rocky mountains, to the north, but do not think that they occur at present west of the Cascades, and it is even doubtful whether they formerly existed there, although I have heard of *horns* of the *species* being found, but have never seen them. The Indians say that there is another large animal of the deer kind, not the *elk*, which is found in the timbered district between Puget Sound and the sea, on the Quinatt stream. Their statements cannot be much relied on.—G.

NOTE.—I have obtained from Dr. Webber, of Steilacoom, a skull of an animal of the deer kind which the Indians say was formerly very plentiful, but now exterminated, and which they call in the Chimook jargon the *massache maivitch*, or bad deer. Several similar skulls have been obtained on the Steilacoom Plains. This skull was sent to Washington, but was unfortunately lost on the way.

The *carriboo* is said by the employés of the Hudson Bay Company to extend in the Rocky mountains as far south as the Kootenay country, which lies near the 49th parallel.—G.

It is said by the residents on Bellingham bay that the moose is found on the Nooksahk river. Perhaps the animal they refer to is the carriboo, or reindeer. I have never seen the horns of either in the vicinity of Puget Sound, except a pair of moose horns which I brought myself from another part of the country, which had been obtained in the most eastern part of Washington Territory, near the St. Mary's valley, in the Rocky mountains. These I showed to a number of Indians about Fort Nisqually, Puget Sound, who all appeared much astonished, and declared that they knew nothing about the animal.

The same horns are now in the museum of the Smithsonian Institution. I am told that moose are very common in the Rocky mountains near where these were obtained, and that they attain a very large size.—S.

CERVUS CANADENSIS, Erxl.

American Elk.

BAIRD, Gen. Rep. Mammals, 1857, 638.

The elk extends throughout the mountainous timbered districts of Washington and Oregon Territories, and all the way down the coast to San Francisco. I suppose that the range of the species from the Rocky mountains to the Pacific has been by the line of the heavily timbered Cascade mountains. In the mountains west of Astoria they are as abundant as they were in the days of Lewis and Clark.

Judge Ford, long a settler in Washington Territory, and an enthusiastic hunter, says that the elk of the Pacific coast is not the elk of the "plains," but has a *larger* and *coarser head*. He has been, through life, familiar with game, and is *positive* that they are different animals.—G.

Elk are found in the Rocky, Cascade, and Coast ranges of mountains. They are, perhaps, most abundant on the last mentioned chain throughout its whole course through Oregon and Washington Territories. In the latter they are especially abundant on the headwaters of the branches of the Chehalis river, and also upon the northern slope of the Coast range, back of Port Discovery and Sekwim bay. Near the last locality they are very abundant during the winter, being driven down by the snows on the mountains. They run in large droves, following well beaten trails, and at that season are an easy prey to the hunter. In January, 1857, two men in the vicinity of Sekwim bay killed eleven fine elk in one day. I obtained but one skin during my stay in the Territory. This was found at an Indian lodge, at the mouth of the Lummi river, a few miles from the coal mines on Bellingham bay. The skin is now in the Smithsonian collection, but I fear is in too imperfect a condition to admit of accurate comparison with others from the east side of the Rocky mountains. Elk are abundant in certain sections of California, and I myself saw a very handsome pair of half grown individuals exhibited alive in a menagerie at San Francisco. They were a handsome symmetrical pair of beasts, of a cream or light fawn color, and were quite tame and in good order, apparently bearing their confinement well. Elk were killed by our men in Minnesota as far west as the Red River of the North. They were then not seen until we reached the Missouri, but became quite plentiful as we approached the Rocky mountains, frequently going in large bands.—S.

CERVUS VIRGINIANUS, Boddaert.

Virginia Deer.

Baird, Gen. Rep. Mammals, p. 643.

Among a number of deer skins from Fort Steilacoom, sent by me to the Smithsonian collection, were several apparently belonging to this species. I regret that their imperfect condition precluded absolute determination.—S.

(See notes on next species.)

CERVUS LEUCURUS, Douglas.

White-tailed Deer.

Cervus leucurus, Douglas, Zool. Jour. IV, Jan. 1829, 330.
Richardson, F. Bor. Am. I, 1829, 258.
Aud. & Bach. N. Am. Quad. III, 1853, 77; plate cxviii.
Baird, Gen. Rep. Mammals, 1857, 649.
Long-tailed red deer, Lewis & Clark.

Sp. Ch.—Horns and gland of the hind legs as in *C. virginianus;* tail appreciably longer; hoofs long and narrow; fur compact. General color above, in autumn, yellowish gray, clouded and waved, but not lined with dusky. Chin entirely white, with only a small dusky spot on the edge of the lip. Ears gray, with a basal white spot behind. Anal region and under surface of the tail, but not the buttocks, white. Tail reddish above, without exhibiting any dusky.

The white-tailed deer is well known to the Indians near Fort Steilacoom; at least they describe a deer *not* the *C. columbianus*, which they call *skehgrouts*. Another species, not the *black-tailed*, is known as the *long-tailed* deer, and is called *spt-ko-bsh*. The latter, they say, inhabits the small groves and the shrubby borders of the lakes on the prairies of that vicinity. About these distinctions in species they are positive. Perhaps one may be the red deer, (*C. virginianus*,) of which Professor Baird seems to think there are indications among the skins in my collection. A pair of horns, apparently belonging to the *C. leucurus*, Dougl., were obtained by me at Whidby's island, Puget Sound.—S.

CERVUS MACROTIS, Say.

Mule Deer.

BAIRD, Gen. Rep. Mammals, 656.

Several experienced hunters have assured me that the mule deer has been killed by them on the eastern slope of the Cascade mountains, within the limits of Washington Territory.—S.

CERVUS COLUMBIANUS, Rich.

Black-tailed Deer.

Cervus macrotis, var. *columbianus*, RICHARDSON, F. B. Am. I, 1829, 255; pl. xx.
Cervus columbianus, BAIRD, Gen. Rep. Mammals, 1857, 659.
Cervus lewisii, PEALE, Mammalia and Birds U. S. Ex. Ex. 1848, 39.
Cervus richardsonii, AUD. & Bach. N. Am. Quad. II, 1851, 211.—IB. III, 1853, 27; pl. cvi.
Black-tailed fallow deer, LEWIS & CLARK.

SP. CH.—About the size of *C. virginianus*, or less. Horns doubly dichotomous, the forks nearly equal. Ears more than half the length of the tail. Gland of the hind leg about one-sixth of the distance between the articulating surfaces of the bone. Tail cylindrical, hairy and white beneath; almost entirely black above. The under portion of the tip not black. Winter coat with distinct yellowish chestnut annulation on a dark ground. Without white patch on the buttocks. There is a distinct dusky horse-shoe mark on the forehead anterior to the eyes.

Lewis and Clark includes this species among the *three* kinds of deer which, they say, inhabit Oregon. The other two of these are the common *red deer* and the *mule* deer.

The black-tailed deer I found the most common kind on the Klamath mountains and in Shasta valley. The Klamath mountains sustain a mixed and rather open forest of pine, oak, and other trees, both evergreen and deciduous. The black-tail, though much larger than the red deer, is inferior for the table, the meat being generally dry and of indifferent flavor.

I have seen it stated that a characteristic of the black-tailed species is, that the horns *bifurcate equally*, each of the double prongs having points. This is certainly *not* universal; for, although I have seen horns forked in that manner, I have seen *more that were single*.—G.

NOTE.—As a general rule it may be observed, that American Oregon is not a hunting country, especially that portion of it west of the Bitter Root and Blue mountains. What few fur-bearing animals there were once are now again increasing, especially the *beaver*. The Indians, however, are greatly diminished in numbers, and, moreover, hunt much less than formerly. With their natural improvidence they have, on the other hand, destroyed the *deer* in certain districts, as, for example, that on the eastern slope of the Cascade mountains.

The possession of fire-arms has been, in many respects, an injury to the savages, leading them to the wanton slaughter and destruction of the deer during heavy snows.—G.

The black-tailed deer is, by far, the most numerous species in the heavily-wooded districts west of the Cascade mountains. Its range, in all probability, extends from as far north as the northern limits of the dense forests of the coast to near San Francisco, in California, and, perhaps, still further south in the Sierra Nevada mountains. On Puget Sound, although apparently not the only species, it far exceeds any other kind in numbers. It frequents the dense forests of Douglass fir which there exist, and, unless hunted with dogs, is generally very difficult to obtain. During several years' residence at Fort Steilacoom I had occasional opportunities of seeing this deer, either alive or dead. It has nearly the same habits as the red deer, and although, at times, fond of visiting the borders of prairies, or the weedy edges of ponds and lakes, its principal residence is in the sombre forests of the region. In winter they approach the coast or the vicinity of the salt water, probably having found, by experience, that the

temperature is much warmer, and their chances of obtaining a full supply of food much greater there than in the interior. In April or May they retreat to the interior, and to the foot-hills and spurs of the Cascade mountains, where they remain until the next cold weather—during the interval rearing their young. The fawns are usually dropped about the last of May, the dam frequently having two at a birth. They are spotted with white, resembling closely the young of the Virginian deer.

A fine male black-tailed deer was killed near White river, about thirty miles northwest of Fort Steilacoom, on the 28th of March, 1856. The skin was preserved and sent to Washington city. This deer had no horns, having apparently recently shed them. Its ears, when mutually abducted their fullest extent, measured, from tip to tip, 23 inches; from occiput to tip of nose, 16 inches; circumference behind shoulders, 3 feet 7 inches. The buck was considered very large.

The name of the black-tailed deer, in the Nisqually language, is *stub-eh-o-otl.*—S.

NOTE.—The deer of Whidby's island, Puget Sound, are remarkable for the fact that frequently white and mottled individuals are found among them. To what species they belong I am uncertain, but presume they are mere varieties or albinoes of the present species, which certainly exists in great numbers on that island. In this opinion Mr. Gibbs coincides with me.—S.

ANTILOCAPRA AMERICANA, Ord.

Prong-horn Antelope; Cabree.

BAIRD, Gen. Rep. Mammals, p. 666.

Lewis and Clark mention that the antelope exists on the great plains of the Columbia, though by no means as abundant as east of the Rocky mountains. I suspect that they are nearly if not quite extinct there, as I have never met them. Neither have I ever heard of them in Oregon *west* of the Cascades. I however saw them in large droves in the Shasta valley, and suppose that they occur on the plains of California generally.—G.

The antelope is, without doubt, sparingly found in Oregon; but unless stragglers occur on the Spokane plains, it is doubtful whether it enters Washington Territory. Townsend corroborates Lewis and Clark's statement that they are found in Oregon, and I myself have been on expeditions in the vicinity of Snake river when some members of our party have seen them. They are said by the Indians to have been formerly quite plentiful at the Dalles of the Columbia, but they are now nearly exterminated in that locality. A few, however, are still found at the warm springs near the sources of John Dea's river, about 100 miles from Fort Dalles.—S.

APLOCERUS MONTANUS.

Mountain Goat.

Ovis montana, ORD, Guthrie's Geography (2d Am. Ed.) II, 1815, 292, 309.—IB. J. A. N. Sc. I, I, 1817, 8.

Aplocerus montanus, RICHARDSON, Zool. of Herald; Fossil Mammals, II, 1852, 131; pl. xvi-xix. Osteology.
BAIRD, Gen. Rep. Mammals, 1857, 671.

Capra americana, BAIRD, Rep. U. S. Pat. Off. Agricultural for 1851, (1852,) 120; plate. (From Rich.)
AUD. & BACH. N. Am. Quad. III, 1853, 128; pl. cxxviii.

Rocky Mountain Sheep, JAMESON, "Wernerian Transactions, III, 1821, 306."

Mountain Goat, Mountain Sheep, White Goat, &c., VULGO.

Wow of the Yakima, Walla-Walla, and Klickatat Indians.

SP. CH.—Entirely white. Horns, hoofs, and edge of nostrils black. Hair long and pendant. A beard-like tuft of hair on the chin.

This animal, described by Lewis and Clark, vol. 3, pp. 117, 118, is the American mountain

goat, common to both the Rocky and Cascade mountains, and is wooly, somewhat like the domestic sheep. The fact that the explorers above mentioned had only seen *skins* accounts for their imperfect descriptions, as well as for the inconsistent accounts they give of their horns. There is a curious story, common among mountain men, that in leaping from precipices it alights on its horns and rebounds without injury! I have never heard of this species in California, though they may exist in the Sierra Nevada. The Yakimas and Snoqualme Indians get then in the Cascade mountains, north of the Columbia, in latitude 47° 30′. They were formerly, if not now, abundant on Mount Hood.—See Lewis and Clarke's narrative.—G.

I have obtained several hunters' skins of the mountain goat from the localities north of the Columbia river mentioned by Mr. Gibbs. Mr. Craig, an old Indian trader, and at present United States Indian agent, among the Nez Percés, says that these animals are quite abundant in the mountains near the Kooskooskia and Salmon rivers, streams which empty into Snake river, and that in the country of the Nez Percés, about forty miles from his residence, they are found in *great numbers* on the bald hills and bare mountains of the locality, and that upon these they can be seen from a great distance feeding in "large droves." He says that the *male is white*, the female similar but *tinged with yellow*, and that the horns are strong and of a beautiful jet black.

I have seen dozens of hunters' skins of these animals in the lodges of the Indians on Whidby's island, Puget Sound. They were obtained from the Indians living about Mount Baker in the Cascade range. Skins obtained by the late Lieutenant John Nugen and myself are now in the Smithsonian collection.—S.

OVIS MONTANA, Cuv.

Bighorn; Mountain Sheep.

Baird, Gen Rep , Mammals, p. 673.

The Bighorn Sheep.—There are several rocky prominences in northern California which, among the old hunters and trappers, have the name of "Sheep rocks," where the bighorn exists, or did exist until recently. One of these lies to the north and east of Shasta butte, (or Mount Shasta,) in the range bordering Shasta valley on the east. Another locality is a singular and conspicuous point between Scott and Shasta valleys. It also exists, I am told, in the recesses of the Cascade mountains, but of this fact, or of its being found in the Olympic (Coast) range in Washington Territory, I am uncertain. The natives of the northwest coast north of 54° 40′ make spoons from a substance which I suppose to be their horns, and if so, they undoubtedly exist as far north as that point. An old trapper told me that he had once witnessed an encounter between a bighorn and a black bear, in which the latter was worsted and had to retreat, the ram having knocked him down three times.—G.

The Mountain Sheep, (Tinoon of the Walla-Wallas?) is said to be found on Mount Hood, near Fort Dalles, Oregon. I once saw a large horn in use as a plaything by some Indian children at the Dalles, which appeared to belong to this animal, but was much smaller than is common. I have eaten the mutton killed in the Rocky mountains, west of the dividing ridge, within the limits of Washington Territory. The flesh is very good, tasting much like the mutton of tame sheep, having the same peculiar flavor, only a little stronger. They are said to abound in the Black Hills and "Mauvaises Terres of Nebraska."—S.

BOS AMERICANUS, Gmelin.

American Buffalo; Bison.

BAIRD, Gen. Rep., Mammals, 682.

The American Buffalo.—Jedediah S. Smith says that prior to 1830 the *most western limit* of this animal was at the head of the river Malade, (a branch of Snake river,) heading in the Salmon River mountains. Angus McDonald, esq., of the Hudson Bay Company, tells me that he found a buffalo skull in the cañon of Snake river, at the foot of the Great Shoshonee Falls, eight miles above Rock creek. Wilkes, or Frémont, gives the Pont Neuf as their boundary in 1841. In 1845 they left the valley of Bear river, and I doubt whether they now cross Green river, or even come through the South Pass. Formerly, it is said, they were quite plentiful in the British possessions *west* of the Rocky mountains. I was told in 1853, by an old Iroquis hunter, that a lost bull had been killed twenty-five years before in the Grand Coulée; but this was an extraordinary occurrence, perhaps before unknown.—G.

The only buffalo that I have heard of which has been killed within late years north of the South Pass and *west* of the Rocky mountains was a "lost" bull, which was seen and killed at Horse Plain, at the junction of the Flathead and Hell Gate rivers, on the day I passed it on my canoe voyage in November, 1853. The Indians were in great glee, saying "The buffalo are *coming back* among us!" a hope in which, it is needless to say, they have been disappointed. Their remark, however, would indicate that these animals formerly were abundant in the valleys on the headwaters of Clark's Fork of the Columbia.—S.

ANIMALS INTRODUCED INTO OREGON AND WASHINGTON TERRITORIES.

Horned Cattle.

Horned cattle of the wild Spanish variety were introduced into Oregon from California a few years ago by the Hudson Bay Company. Having increased rapidly, in 1850 there were about 4,000 head on the Nisqually plains. Although private property they have become so wild that they have to be hunted and killed on horseback, like buffalo. Owing to the rapid settlement of the country and to other causes, these wild cattle are now (1855) becoming rapidly exterminated. The jargon word for cattle is *Moos-moos*, and is a corruption of *Moos moos-chin*, the Walla-Walla word for *buffalo*.—G.

The California cattle are now done away with to a great extent in both our northwestern Territories, having given place to the better breed of domestic stock which have been driven across from the valley of the Mississippi. It is said that a cross between the two kinds adds great hardiness to the stock, and that a dash—say one-fourth or one-eighth—of the Spanish blood is really an improvement to the breed.—S.

The Horse.

The Yakimas (living north of the Columbia) say that they first obtained the horse from the Flatheads. The latter probably got them from the Snakes, who, in their turn, probably obtained them from the Comanches. Garry, the Spokane chief, cannot say how long it is since his tribe got them. Lewis and Clark's description of the standard of the Oregon horse is far superior to that of the present stock. It is probable that they have much deteriorated by promiscuous breeding, and by the introduction of the *white* horse.

Lewis and Clark say, "some of these are pied; the greater part, however, are of a uniform tinge, marked with stars, white feet," &c. At present, although there are some really fine individuals among them, the mass are in a great measure *white*, with "glass" or "wall" eyes, &c. It would be interesting to decide where the white stock came from. The California horse shows but little of the white admixture.—G.

There are old men now living at the Dalles and among kindred tribes in the vicinity who say that they remember seeing other old men who were living when the horse was first introduced among them. They say that the first horses obtained were looked upon as great curiosities, and as their use was not known, the animals were kept merely for show and as pets. They were led about in the festive processions, and were present at all dances and fetes. This must have been about 125 years ago.

Camotrispellum, the old war-chief of the Cayuses, says that they were obtained of the Snakes, thus confirming Mr. Gibbs' supposition. They are a hardy race and remarkably free from disease, lameness, or other ills that horse flesh is liable to. An instinct which appears universal among them is to jump "stiff-legged," or "buck-fashion," when first mounted for breaking. This vice is said to be rare among the horses of the older States.—S.

NOTE.—Other domestic animals have been introduced into Oregon and Washington Territories. Among these are sheep, asses, goats, eastern horses, dogs, pigs, cats; all of which thrive very well. The sheep, however, owing to the abundance of wolves, as a general rule, require guarding by shepherds, especially east of the Cascades. On the Nisqually plains, the Puget Sound Agricultural Company (an offshoot of the Hudson Bay Company) possess a large number, their flocks in 1855 containing 11,000 individuals.—S.

No. 3.

REPORT UPON THE BIRDS COLLECTED ON THE SURVEY.

CHAPTER I.

LAND BIRDS, BY J. G. COOPER, M. D.

ORDER I. RAPTORES. Birds of Prey.

Family VULTURIDAE. The Vultures.

CATHARTES AURA, Illiger.

The Turkey Buzzard, or Vulture.

Vultur aura, Linn. Syst. Nat. I., 122, (1766.)

Cathartes aura, Illig. Prod. Syst., p. 236.

Cathartes aura, (Linn.) Cassin, Gen. Rep. Birds, p. 4.

C. septentrionalis, De Weid, Reise, I, 162, (1839.)

Figures.—Wilson Am. Orn. IX, pl. 75, fig. 1; Aud. B. of Am. pl. 151, oct. ed., I, pl. 2.

Sp. Ch.—Bare skin of head and neck, red. Female: length about 30; wing, 23; tail, 12 inches. Male smaller, (as in all rapacious birds.)

The turkey buzzard is very abundant during summer in all parts of the Territory I have visited, frequenting the vicinity of prairies and river banks, and never appearing along the coast. They arrived at Puget Sound about the middle of May, and flocks of them could be seen daily about the carcasses of sheep; but I never observed any other species in company with them. I have not seen their nests, but have no doubt that they build in the Territory.—C.

The turkey vulture was found by me both at Fort Dalles, Oregon Territory, and on Puget Sound, Washington Territory. It is, however, but sparingly abundant. On the Nisqually plains I frequently saw them in couples, or sometimes in small groups of half a dozen, surrounding dead sheep or other carrion.

On the route of the Northern Pacific Railroad survey I shot one of these birds on the Bois des Sioux river, which is a tributary of the Red River of the North, and not far from Pembina, thus corroborating Mr. Say's statement of having observed them in that place.—S.

CATHARTES CALIFORNIANUS, Cuvier.

The California Vulture.

Vultur californianus, Shaw, Nat. Misc., pl. 301, (1779.)
Vultur columbianus, Ord, Guthrie's Geog., II, 315, (1815.)
Cathartes vulturinus, Temm. Pla. col. I, pl. 31, (1820.)
Cathartes californianus, Cuvier, Regne An. ed .Ib. 2, p. 316.
Baird and Cassin, Gen. Rep. Birds.

Figures.—Aud. B. of Am., pl. 411, oct. ed. I, pl. 1; Gray, Gen. of Birds, I, pl. 2.

The largest rapacious bird of North America. Head and neck bare, with a semicircular spot of short black feathers at the base of the upper mandible, and a few straggling, short, or hair-like feathers on other parts of the head. Plumage commencing on the neck, near the body, with a ruff of long lanceolate feathers continued on the breast.

Entire plumage black, lustrous on the upper parts, duller below; secondary quills with a grayish tinge; greater wing coverts tipped with white, forming a transverse band on the wing. Bill yellowish white; iris carmine; head and neck in living bird orange yellow and red.

Total length, 45 to 50 inches; wing, 30 to 35; tail 15 to 18 inches.

Hab. Western North America. Spec. in Nat. Mus. Washington, and Mus. Acad. Philadelphia.

The Californian vulture visits the Columbia river in fall, when its shores are lined with great numbers of dead salmon, on which this and the other vultures, besides crows, ravens, and many quadrupeds, feast for a couple of months. While the expedition was travelling near the upper Columbia, in the fall of 1853, I saw none of this species, though turkey buzzards were common, and I concluded that these did not extend their wanderings eastward of the Cascade mountains. On our return to Vancouver, November 18, none were to be seen there, and as the rainy season had set in I supposed they had retired south. In January, 1854, I saw, during a very cold period, a bird which I took for this, from its great size, peculiar flight, and long bare neck, which it stretched out as it sat on a high dead tree, so as to be scarcely mistakable for any other bird. The river being then frozen solid, and the ground covered with snow, it did not appear to admire the scenery and soon started off towards the south. During several voyages on the Columbia, in summer and spring, as well as a long residence near its mouth, I never again saw this bird, and must consider it only a visitor at certain seasons, and not a resident even during summer. Townsend supposed he saw its nests along the Columbia, but did not examine them, and was probably mistaken. I neither saw it nor heard of its occurrence at Puget Sound.—C.

The Californian vulture, according to Nuttall, (see Manual, 2d ed.,) is a summer resident of *Oregon;* Townsend and Audubon also speak of its occurrence there. It was my misfortune to be absent from the main salmon fisheries at the annual period, when this bird is said to be abundant, and I was therefore unable to obtain, or even see, a single individual. I do not doubt the correctness of Mr. Nuttall's statement, and am pleased to bear testimony to the great general accuracy of his recorded observations concerning the natural history of Oregon. Since his *manual* was written the old "Territory of Oregon" has been divided, and its northern portion, or all that lying north of the Columbia and east of Walla-Walla, of the 46th parallel, now forms the Territory of Washington. The fauna of both Territories is very similar and, with but few exceptions, the statement that a bird or quadruped is found in one is very presumptive evidence that it is, at least, accidental in the other.—S.

Family FALCONIDAE. The Falcons.

Sub-family FALCONINAE. True Falcons.

FALCO NIGRICEPS, Cassin.

The Western Duck Hawk.

Falco nigriceps, Cassin, Birds of Cal. and Tex., I, p. 87, (1853.)—Ib. in Gilliss' U. S. Astron. Exped , II,(1855,) pl. xiv.—Baird & Cassin, Gen. Rep. Birds, p. 8.

Sp. Ch.—Above bluish cinereous, narrowly banded with black; below reddish, with circular spots, and bands of black on sides. Crown and cheeks nearly black. Female: length 15 to 17½ inches; wing, 11 to 12; tail, 6 to 6½.

Younger: above dark brown; tail barred with rufous on inner webs; beneath reddish yellow, with broad stripes of black.

Adult: resembling the common duck hawk of the eastern coast, (*F. anatum*,) but smaller, and with the bill disproportionately weaker. Head and neck above black, and a large black space on cheeks.

Specimen No. 8501, original No. 63. Dimensions when fresh: Length, 17.25; extent, 39.50. Iris hazel, bill whitish blue, feet yellow. Plate xi (birds) represents this specimen.

Of the western duck hawk I have seen only two pairs, which, in March, 1854, frequented a high wooded cliff at Shoalwater bay. Often as I passed underneath they would fly round over my head, and I succeeded in shooting two of them, which were marked exactly alike. The other two, from their larger size, I supposed were females, and they soon after left the neighborhood. I supposed from their keeping about the same spot that they intended to build there.—C.

In the summer of 1856 Mr. George Gibbs, of Steilacoom, W. T., presented me with a specimen of this bird, killed near his farm. This was forwarded to the Smithsonian Institution museum. I know nothing respecting its habits.—S.

FALCO COLUMBARIUS, Linnaeus.

The Pigeon Hawk.

Falco columbarius, Linn. Syst. Nat., I, 128, (1776.)—Wilson, Am. Orn. II, pl. xv, fig. 3.—Baird & Cassin, Gen. Rep. Birds, p. 9.

Falco columbarius and termerarius, Aud. B. of An., pl. lxxii and xcii; oct. ed. I, pl. xxi.

Hypotriorchis columbarius, Newberry, P. R. R. Rep., vol. VI, p. 74, (Birds.)

Sp. Ch —Small and stout in form; above bluish slate color, with black lines; beneath pale yellowish or reddish white, each feather with a black stripe. Tail with one wide dark band, and several (about three) narrower bands of black.

Younger: dusky or light brown; sometimes with ferruginous markings; beneath dull white, with light brown stripes. Tail pale brown, with about six white bands.

Young: brownish black, the white parts dusky, stripes wider, sides with black bands and white spots; quills and tail nearly black, the tail with about four white bands, or unspotted.

No. 4476, adult female, Straits of Fuca, April, 1855. Length, 12. 50; extent, 27 inches.

No. 4475, adult male, Santa Clara, Cal., November, 1855. Length, 11. 75; extent, 23. 50.

No. 4477, young male, Shoalwater bay, August, 1855. Length, 10. 25; extent, 22. 50.

Iris brown, bill bluish black, cere and feet yellow, in all the specimens.

The pigeon hawk seems to be rather uncommon in the Territory. I shot one in June, 1853, and did not see another until April, 1855, when they had just arrived at the Straits of De Fuca. I was surprised one day by an unusual screaming of some bird close to the house, and going out I found that one of these hawks had just caught an unfortunate flicker, which probably feared no assault from a bird no larger than itself. Its weight brought the hawk to the ground, where I immediately shot it. On picking it up the flicker, though unhurt either

FALCO NIGRICEPS

by the hawk or my shot, was so frightened that it made no effort to escape from the claws which still held it with the grasp of death. When I released it it flew to a tree near by, and for some time showed its astonishment and joy by loud cries.

As the pigeon hawk is found in summer, it doubtless breeds in the Territory. In August, 1855, I shot one of a small family of young which had but lately left the nest. They probably migrate southward in winter, as I found them abundant in California in October and November.—C.

About the 1st of August this bird becomes very abundant in the vicinity of Fort Steilacoom, W. T. During the summer and autumn of 1856 I obtained a number of specimens in different stages of plumage. Several of these had regular oval spots of rust or cinnamon color on the inner vanes of the primaries. In this character these birds appear to resemble the bird noticed by Cassin in the birds of "California, Texas," &c., among the "doubtful and obscure" North American species, *Falco obscurus*, Gm.—(Cassin's work, page 118, vide quotations from Pennant.)

I think that near Puget Sound this species breeds in the recesses of the Cascade mountains, not coming down upon the open plains until late in the summer.—S.

FALCO POLYAGRUS, Cassin.

The Lanier Falcon.

Falco polyagrus, Cassin, B. of Cal. and Texas, I, p. 88, pl. 16, (1853.)
Baird & Cassin, Gen. Rep. Birds, p. 12.

Sp. Ch.—Above brown, quills and tail grayish, tail with white bands. A brown strip from the corner of the eye downwards, and narrow brown stripes and spots below; also a large brown patch on breast near shoulder and another on flanks. Forehead, cheeks, and under parts white.

The young has the white parts much more obscured with brown; upper parts paler brown, with rufous streaks.

Female: length, 18 to 20 inches; wing, 13 to 14; tail, 7½ to 8.

This hawk is not at all rare in Oregon. I was fortunate enough to obtain a specimen of it at Fort Dalles, O. T., in the beginning of the winter of 1854–'55, which was killed while in the act of carrying off a barnyard fowl, of about its own weight, that it had just seized from near the door of a dwelling house. This action of the bird seemed to denote that, as a species, it is not inferior in strength, resolution, and ferocity to either the other falcons or the buzzards.—S.

FALCO SPARVERIUS, Linnaeus.

The Sparrow Hawk.

Falco sparverius, Linn. Syst. Nat. I, 128, (1766.)
Baird & Cassin, Gen. Rep. Birds, p. 13.
F. dominicensis, cinnamoniensis, and isabellinus, Swainson, Cal. Cycl. p, 281.
Figured in Wilson's Am. Orn., II, p. 16, f. 1; Aud. B. of Am., oct. ed.
Tinnunculus sparverus, Newberry, P. R. R. Rep., vol. VI, p. 74.

Sp. Ch.—Easily distinguished by its small size, rufous or ferruginous upper parts, beautifully variegated with black and white. The young has the back much more barred, and numerous narrow bars on tail; a large blue patch on shoulders; spots beneath larger and mingled with stripes. Female larger and more like the young in colors than the male.

Male: length, 9½ to 11; wing, 6 to 7; tail, 4½ to 5½.

Female: length, 10½ to 12; wing, 7 to 8½; tail, 5 to 5½.

The sparrow hawk is extremely common during summer about prairies, even at the summit

of the Cascade range, but I have never observed it in the forests or near the sea shore. I noticed their arrival at Puget Sound early in May, and have only once seen what I suppose to have been this bird after October, although at that time I noticed differences of form and flight, which led me to think it might be another species. In my notes it is recorded that, in the snowy January of 1854, at Vancouver, "I saw a hawk colored like the sparrow hawk, but apparently of a stouter form and different mode of flight." I saw it only a few times, and was unable to obtain it.

I remarked nothing in its habits not observed in the very complete accounts given of it as occurring in the Atlantic States.—C.

I obtained several specimens of the *F. sparverius*, both at Puget Sound and Fort Dalles. They do not vary materially from those of other parts of North America, although, as in other situation, individuals vary slightly. In Oregon they are particularly numerous in the "oak openings" at the base of the Cascade mountains. I found this bird exceedingly abundant along the upper Missouri and its tributaries, wherever there was timber, or, at least, where the timber was sparse. They are not generally abundant in the thickly wooded districts; and I never met them in a broad prairie country, unless in the vicinity of "timber islands" or wooded streams.

It is exceedingly abundant on the Nisqually plains, Puget Sound, principally affecting the vicinity of small clusters of the oak. Those that I have noticed striking their prey, such as finches, small larks, &c., generally do so in the following manner: The hawk soars around and about the prairies at a short distance above the ground; upon discovering his victim quietly feeding in the grass, he makes a sudden downwards sweep, and generally succeeds in carrying off his victim. This hawk appears to delight in soaring about, in, and out of low trees, apparently for mere pastime. It also spends much time on the ground, probably in quest of grasshoppers and other insects. It is easily approached and killed. Two specimens sent from Puget Sound to the Smithsonian museum measured as follows: No. 346, ♂, April 20, 1856, 11, 23; No. 399, ♀, May, 1856, 11½, 23½ inches.—S.

Sub-family ACCIPITRINAE. Slender Hawks.

ASTUR ATRICAPILLUS, Bonaparte.

The Goshawk.

Falco atricapillus, Wilson, Am. Orn., VII, 80, pl. 52, fig. 3.

Astur atricapillus, Bonap. Oss. Cuv. Reg. An , p. 33.

A. atricapillus, (Wilson,) Baird and Cassin, Gen. Rep. Birds, p. 15.—Newberry, P. R. R. Rep., vol. VI., Zoology, p. 74.

Falco palumbarius, Linn., Aud. B. of Am.; pl. 141; oct. ed., I. pl. 23.

Sp. Ch.—Above colored much like *F. nigriceps*, but much larger; and with the under parts mottled with narrow transverse lines of white and light ashy brown

Young: above dark brown, mottled with light reddish; tail light ashy, with five wide brown bands; underneath white or tinged with red or yellow; every feather with a brown stripe, mostly ending in an ovate spot.

Female: length, 22 to 24; wing, 14; tail, 10½ to 11 inches.

Male: length, 20 inches; wing, 12½; tail, 9½ inches.

No. 4516 (120,) Shoalwater Bay, January 20, 1855.

Young female: length, 24; extent, 44; tail, 11.50.

Iris yellow, bill bluish black and white, feet greenish yellow.

This bird I met with in a dense spruce forest, where it was devouring a squirrel on the ground. It flew into a tall tree and was so closely concealed that I only discovered it after a long search by seeing its tail move. I afterwards shot a beautiful specimen in full plumage, which came darting like lightning through the dark forest, and alighted so near me that I could see its flashing eye; but not being killed at once, it managed to escape among some underbrush and logs, where I sought it for an hour in vain. It would seem to be the special frequenter of dark woods, where other hawks are rarely seen.—C.

I obtained several specimens of the American goshawk, both at Fort Dalles and at Fort Steilacoom. The specimens collected were in different stages of plumage, one being a very fine specimen of the adult.

This hawk is bold, swift, and strong. It does not hesitate to sweep into a poultry yard, catch up a chicken and make off with it almost in a breath. The manner of seizing its prey is by a horizontal approach for a short distance, elevated but a few feet from the ground, a sudden downward sweep or side glance, and then, without stopping its flight, making its way to a neighboring tree or its nest with the struggling victim securely fastened in its talons.

Considering the size of this bird, for strength, intrepidity, and fury, it cannot be surpassed, these qualities almost rendering it feline in its character. It is also quite cunning, seizing very opportune moments for its attacks. It was not until many days that I was able to have a bird of this kind killed, although men were constantly on the watch for him. So adroit was he at seizing opportunities to make his attacks, that he would regularly visit our poultry yard twice and even thrice in a day, and yet always contrived to escape unmolested.

This species is frequently known among the Oregonians as the "*blue hawk.*" The goshawk is found earlier than the others, and three specimens which I obtained were in most elegant adult plumage. Why the birds of this family become so plentiful for a few months I am unable to say, but think that, as above stated, having bred in the retired recesses of the Cascade and Coast ranges of mountains, they remain until their young are well able to fly, when they all descend to the open plains, where they can obtain a more abundant supply of food, such as finches, larks, robins, doves, band-tailed pigeons, meadow mice, moles, gophers, young rabbits, and even grasshoppers.—S.

ACCIPITER COOPERI, Gray.

Cooper's Hawk.

Falco Cooperii, Bonap. Am. Orn. II, 1, (1828.)
Accipiter Stanleii, Aud. Orn. Biog. I, 186, 1830.
Accipiter Cooperi, Gray, List Brit. Mus., p. 38; Gen. B. sp 6. (Bon.) Baird & Cassin, Gen Rep. Birds, p. 16.
Astur Cooperi, Newberry, P. R. R. Rep., vol. VI., Zool. p. 74.

Figures.—Bonap. Am. Orn. II, pl. 10, f. 1, Aud. B. of Am., pl. 36, 141, f. 3; oct. ed. 1, pl. 124.

Sp. Ch.—Above, ashy brown, darker on head and mixed with white; below, white, throat with narrow streaks, the rest with light rufous bars. Tail, dark cinereous, with four wide black bars. Young, pale brown above, mottled with white and rufous; beneath, white, with narrow light brown stripes.

This hawk is commonly confounded with others, under the name of "chicken hawk." It is very abundant in summer, and often killed about farm yards, where it seizes on chickens before the very eyes of the owner, darting down like lightning and disappearing again before he can

see what has disturbed his poultry yard. I believe it to be a constant resident, and to build in the Territory.—C.

Cooper's hawk is a common bird of prey in Oregon and Washington Territories. I obtained numerous specimens of it at Puget Sound and Fort Dalles. The characteristic variations in size and color of this bird hold good in Oregon, scarcely any two specimens being there found that are alike. An undoubted specimen of the *A. Cooperi*, shot at Fort Steilacoom in September, 1856, No. 5846, (590,) measured: length, 19; extent, 30 inches.—S.

ACCIPITER MEXICANUS, Swainson.

Blue-backed Hawk.

Accipiter mexicanus, Sw. Faun. Bos. Am. Birds, p. 45, (1831.)
BAIRD AND CASSIN, Gen. Rep. Birds, p. 17.

SP. CH.—Almost exactly like *A. Cooperi*, but smaller; back more brownish; throat and under tail coverts, white; other under parts more rufous, with white bars and spots; dark streaks only on breast. Young much tinged with reddish above; underneath, yellowish; each feather streaked and often barred near its base. Female: length, 17 to 18 inches; wing, 9¼ to 10; tail, 9; extent, about 30. Male: length, 15 to 16 inches; wing, 9; tail, 8.—C.

This species of hawk I at first took for small individuals of the *A. Cooperi*, but the smaller size, the larger proportionate size of the tarsi, and other peculiarities, induced me to examine the bird more carefully. Upon comparing the specimens with Cassin's description of *A. Mexicanus* I found that they accorded.

An individual killed in the summer of 1856, at Port Townsend, Puget Sound, was shot near a salt marsh. While soaring about it resembled in its motions the common marsh hawk, or hen harrier.—S.

ACCIPITER FUSCUS, Bonaparte.

The Sharp-shinned Hawk.

Falco fuscus and F. dubius, GM. Syst. Nat. I, 280, 281, (1788.)
Accipiter fuscus, BONAPARTE, Comp. List, Birds, p. 5.
A. fuscus, (GM.) BAIRD and CASSIN, Gen. Rep., Birds, p. 18.—NEWBERRY, P. R. R. Rep., vol. VI, Zool., p. 74.
Falco velox and F. pennsylvanicus, WILSON, Am. Orn. V, 116, pl. 45, f. 1 and VI, p. 13, pl. 46, f. 1.

SP. CH.—Almost exactly like the two preceding in color, but much smaller. *Young:* above brown, beneath like young of *A. Cooperi* in color.

Female: length, 12 to 14 in.; wing, 7½ to 8; tail, 6½ to 7 inches, extent about 25 inches.

Male: length, 11 to 12; wing, 6 to 6½; tail, 5 to 5½.

No. 8514, (94,) Shoalwater bay, September, 1854. Length, 11.50; extent, 21.50 inches; male.

This hawk I have not found common, and have observed only in the colder months. It has habits and flight much like the preceding, but, of course, preys on smaller birds. Its small size and long tail, besides its greater swiftness of wing, make it easily distinguishable from the pigeon hawk when flying.—C.

The sharp-shinned hawk is quite common near Fort Steilacoom during the latter part of summer and in early autumn. Like the pigeon hawk, they are quite scarce during the breeding season in the more open country about the head of Puget Sound. They appear to descend from the mountains as soon as the young birds are well able to fly, and, in company with many other species of hawk, remain on the prairies for several months before retiring to the south. A few remain throughout the winter.—S.

Sub-Family BUTEONINAE.—The Buzzards.

BUTEO MONTANUS, Nuttall.

The Western Red-tail Hawk.

Buteo montanus, NUTT., Manual I, 112, (1840.)--BAIRD and CASSIN, Gen. Rep. Birds, p. 26.
Falco buteo, (LINN.,) AUD. Orn. Biog. IV, 508, pl. 372, oct. ed., p. —, pl. ——, (young.)
Buteo Swainsonii, (BONAP.,) CASSIN, Birds of Cal. and Tex., I, p. 48.

SP. CH.—Back brown; tail red, with a black band and a white tip; throat and breast *dark brown*, mixed with *white;* rest of under parts deep rufous, or abdomen sometimes nearly white.

Female: 22 to 25; wing, 16 to 17; tail, 9 to 10 inches. *Male:* 19 to 22; wing, 15 to 16; tail, 8½ to 9 inches.

Young: tail *ashy brown*, with numerous bands of darker shade, and white tip; back mottled with white; underneath *numerous large* dark spots on *all parts.*

No. 8534. Yakima river, August 4, 1853. (8) Length, 22; extent, 48 inches. Female?

No. 8535. Shoalwater bay, March 21, 1854. Length, 22; extent, 48 inches. Male.

No. 4521. Santa Clara, Cal., November 10, 1855. Young male. Length, 20.50; extent, 51 inches. Iris hazel; bill bluish gray; feet yellow.

This is an abundant and resident species in every part of the Territory I have visited, and I have no doubt that it builds there; though, as many hawks build only in the thick evergreen forests, it is very difficult to discover their nests. I have observed it also common in California. I have not observed any difference between its habits and those of its eastern congener.—C.

Quite numerous at Puget Sound; scarcer on the Upper Columbia, east of Cascade mountains.

While I was stationed at Fort Steilacoom I noticed that the poultry yards were as much harrassed by this buzzard as by the goshawk, neither of which hesitated to seize poultry from the very doors of dwelling houses. A slight difference is thus noticed in their habits from those of the eastern States, which, according to Nuttall, are not thus bold except in winter. This may be accounted for by the fact that, on Puget Sound, they are more unsophisticated, and that, although hawks as a *class* are more numerous, small birds to support them are less so in proportion.—S.

BUTEO ELEGANS, Cassin.

Red-bellied Hawk.

Buteo elegans, CASSIN, Proc. Acad. Sc. Phil. VII, 281, (1855.)
BAIRD & CASSIN, Gen. Rep. Birds, p. 28.
Figured in P. R. R. Rep. vol. X. Pl. II, adult; III young plumage.

SP. CH.—Breast nearly *brick* red, unspotted; rest of under parts with numerous reddish white bars.

Female: length, 20; wing, 13; tail, 9 inches.

Male: length, 18½; wing, 12½; tail, 8 inches.

Young female: every feather beneath with a wide irregular brown band, and sagittate mark at its tip. Back brown, *mottled*, shoulders more or less *rufous.* Tail with ten or twelve narrow dark bars and white tip.

Young male: shoulders, under wing coverts, and tibia *darker rufous.*

No. 4520. Killed at Santa Clara, Cal., October 23, 1855; measured length, 19.50; extent, 41 inches; female.

As most probably belonging to this species, I will here mention a hawk which I saw October 25 at the town of Santa Clara: "I have lately seen a hawk which looks and flies like an *owl*,

but has the loud scream and high-sailing habit of the winter hawk at midday. Its back is *gray*, breast *reddish*, tail *red*, (?) and in flying it shows a *large dark spot* under the middle of each wing. A pair keep about the town, and often fly up together, circling around and chasing each other in sport. Their wings are remarkably *short* and *broad.*''

The shape of the wing, apparently smaller size, and *rapid* flapping flight, differed from the red-tail's, as I remarked at the time. I tried on several days to get near one, but without success, as it had begun to be shy at the approach of man, whose murderous intentions most of the hawks on that coast had apparently not yet learned.—C.

BUTEO COOPERI, Cassin.

California Hawk.

Buteo Cooperi, Cassin, Proc. Acad. Philad. VIII, 253, (1856.) Baird & Cassin, Gen. Rep. Birds, p. 31.

''About the size of *Buteo borealis*, but belonging to the same group as *Buteo erythronotus* of South America, (genus *Tachytriorchis*, Kaup, as restricted by Bonaparte, Conspectus Avium, p. 17.'')—Cassin.

Sp. Ch.—*Immature plumage.*—Back feathers white at bases, the rest brownish, tinged with *cinereous;* upper tail coverts, *white*, barred with dark brown and rufous; a general *pale* ashy tinge above. Tail, *white* at base, outer webs cinereous, some inner white and mottled rufous on middle feathers; a subterminal band of dark brown, and tip rufous and white. Under parts *white*, with numerous dark stripes on throat, neck, and flanks. A large brownish black spot on under wing coverts.

The adult in full plumage, which has not yet been obtained, probably has the upper parts of a light ash color, (like that of the old marsh hawk,) and the tail white.

No. 8525, Santa Clara, Cal., Nov. 1855. Young female? Length, 20. 50; extent, 51 inches. Iris, dark brown; bill, bluish; feet and cere, yellow.

Plate XVI, (Birds,) represents this specimen.

In October and November, 1855, I spent six weeks in Santa Clara county, California, where I met with many new and interesting animals. On November 10, I find it noted in my journal, ''Shot a hawk of a kind now quite common here, which keeps about the groves of low oaks, and has much the same cry, habits, and flight, as the red-tail. This specimen appears to be changing its plumage, but has still the *brown* iris, characteristic of young hawks.'' I saw frequently what I took for the same species up to the time of my departure from California, about December 1. As they were not shy, I might have shot several more, but although new to me, I supposed that the many collectors who had preceded me in California must certainly have obtained numerous specimens of the immature bird, and I tried without success to find more perfect specimens. On the 29th November I observed a pair of them sitting *on the ground* in a perfectly level pairie, at a distance from any covert by which I might approach them. These had the light ashy gray color much more distinct than in the specimen, though I could perceive that they too had some of the mottlings of the immature plumage. They seemed to have nearly white tails.—C.

ARCHIBUTEO LAGOPUS, Gray.

Rough-legged Hawk.

Falco lagopus, Gmelin, Syst. Nat. I, p. 260, (1788.)
Wilson, Am. Orn. IV, pl. XXXIII, fig. 1, young.
Aud. B. of Am. pl. 422, fig. 2, adult?
Archibuteo lagopus, Gray, Gen. ed. 2, p. 3.
A. lagopus, (Gm.) Baird & Cassin, Gen. Rep. Birds, p. 32.

Sp. Ch.—Head above yellowish, with reddish stripes; back pale cinereous, sometimes very white, with bands of white and dark brown; beneath white, stripes on throat, and large *spots* and *stripes* of *brown* on breast; numerous *bands* of same on abdomen, tibia, and tarsi. Tail coverts and tail at base white; the rest of the tail cinereous, with a broad black band near tip, and *two* others above it. Blackisk spots, and a large ashy brown space on under wing coverts.

Female: length, 21 to 23; wing, 16 to 17; tail, 9 inches.

Male: length, 19 to 21; wing, 15 to 16; tail, 8 to 8½ inches.

Bowen & C° Lith. & Col. Philada

BUTEO COOPERII.

Young much more brown; a wide *brownish black band* on abdomen; other under parts *yellowish*, with a few brownish lines and spots. Tail white, with a *light brown* band near tip.

A large hawk, with legs densely feathered to the toes, and which cannot be easily confounded with any other American species. It is distinguished from the young of the black hawk, (*A. Sancti Johannis,*) by its smaller size and fewer dark spots on the under parts.—CASSIN.

No. 8549, Shoalwater bay, October 31, 1854, (109.) Length, 21; extent, 52 inches. Iris, pale brown; bill, slate colored and yellow; feet, yellow.

In October, 1854, I found a large number of the rough legged buzzard on a low point near the seacoast, covered with small pines, where they were sitting like owls, on the dead tree tops, occasionally darting down after a mouse, and alighting a short distance off. Sometimes they called to each other with a loud scream, but usually sat for hours motionless and silent. They varied considerably in the amount and distribution of the white feathers, but the specimen shot seemed to be one of the most perfect. One only was of a general dark chocolate color. Some remained all winter, and I think a few build near the mouth of the Columbia, where I saw young birds in July, 1855.—C.

Specimen 6853, (581,) killed at Fort Steilacoom, October 20, 1856, measures: length, $21\frac{1}{2}$; extent, $52\frac{1}{2}$; wing, $16\frac{1}{4}$ inches. Cere and tarsus, yellow; bill, black; iris, greyish yellow.—S.

ARCHIBUTEO FERRUGINEUS, Gray.

Squirrel Hawk.

Buteo ferrugineus, LICHT. Trans. Acad. Berlin, 1838, p. 428.

Archibuteo ferrugineus, GRAY, Gen. p. 3.

A. regalis, GRAY, Gen. I, pl. 6, (plate only.)

A. ferrugineus, (LICHT.,) BAIRD & CASSIN, Gen. Rep. Birds, p. 34.

Buteo californicus, Hutchin's Cal. Magazine, 1857.

Figured in Birds of Cal. and Texas, I, pl. 26.

SP. CH.—Above entirely *dark brown*, and light rufous; tail *reddish white*, mottled with *ashy brown;* pale beneath. Under parts white, with narrow brown streaks and spots on breast, *transverse* and mixed with black on abdomen; flank and axillae bright ferruginous.

Female: length, 23 to 25; wing, 17 to $17\frac{1}{2}$; tail, 9 inches.

Male, smaller. Young: paler, upper tail coverts *white* spotted with *brown; fewer* streaks below; under wing coverts and edges of wing *white.*—C.

I shot an adult specimen (female) in December, 1854, in the vicinity of Fort Dalles, O. T. It seemed old and feeble, and, either from weakness or apathy, allowed me to approach very closely to its resting place. Its plumage was worn, ragged looking, and appeared as if it had not been changed at the previous moulting season. The tail only of this bird I preserved, as I had a press of material on hand, and much other business to attend to. On showing it to Mr. John Cassin he pronounced it to belong to this species.—S.

Sub-family MILVINAE—The Kites.

ELANUS LEUCURUS, Bonaparte.

The White-tailed Hawk; the Black-shouldered Hawk.

Milvus leucurus, VIELL. Nouv. Dict. XX, 563, (1818.)

Elanus leucurus, VIEILL, BAIRD and CASSIN, Gen. Rep. Birds, p. 37.

Elanus leucurus, BONAP. Eur. & Am. Birds.

Falco dispar, TEMMINCK, Pl. Col. I, liv. 54, about 1824.

"*Falco melanopterus*, DAUDIN." Bonap. Jour. Acad. Phil. V, 28.

"*Falco dispar*, TEMM." Aud. Orn. Biog. IV, 367.

FIGURES.—Bonap. Am. Orn. II, pl. 11, fig. 1; Temm. Pl. Col. 319; Aud. B. of Am. pl. 352; oct. ed. I, pl. 16, Gay, Nat. Hist. Chili, Orn. pl. 2.

SP. CH.—*Adult.*—Head and tail and entire under parts white. Upper parts fine light cinereous; lesser wing coverts glossy black, which forms a large oblong patch from the shoulder; inferior wing coverts white, with a small black patch. Middle feathers of the tail light ashy, uniform with other upper parts; bill dark; tarsi and toes yellow.

Total length, female, 15½ to 17 inches; wing, 12 inches; tail, 7½ inches. Male smaller.

Hab.—Southern and western States and South America. Spec. in Nat. Mus., Washington, and Mus. Acad., Philadelphia.

No. 5895. Santa Clara, Cal., Oct. 22, 1855. Female, length, 16½; extent, 41; iris, orange red; bill, black; feet, orange; wing, 12; tail, 7½ inches.

I found this beautiful little hawk quite abundant during my visit to California, and almost always to be seen hovering over the meadows in search of field mice, which seem to be its principal food. This specimen had the remains of one in its stomach. Though this hawk may visit the prairie regions of southern and middle Oregon, I never saw or heard of it near the Columbia river.—C.

CIRCUS HUDSONIUS, Vieillot.

The Harrier; the Marsh Hawk.

Falco hudsonius, LINN. Syst. Nat. I, 128, (1766.)

Circus hudsonius, VIEILL. Ois. Am. Sept. pl. 9.

Circus hudsonius, LINN, BAIRD & CASSIN, Gen. Rept. Birds, p. 38.

"*Falco uliginosus*," GM. Syst. Nat. I, 278, (1788.)

"*Falco uliginosus*," WILSON, Am. Orn. VI, 67.

"*Falco cyaneus*," AUDUBON, Orn. Biog. IV, 396.

FIGURES.—Vieill. Ois. d'Am. Sept. pl. 9; Wilson Am. Orn. VI, pl. 51, fig. 2; Bonap. Am. Orn. II, pl. 12; Aud. B. of Am. pl. 356; oct. ed. I, pl. 26; Sw. & Rich. Faun. Bor. Am. Birds, pl. 29.

SP. CH.—Upper parts, head and breast, pale *bluish ash color*, mixed with *rufous* on back; upper tail coverts *white*. Beneath white with small *cordate ferruginous* spots; quills *brownish black*, externally ashy, inner web partly white; tail light ashy; feathers nearly white on inner webs, with obscure brown bars; below white; under wing coverts unspotted.

Female: length, 19 to 21; wing, 15½; tail, 10 inches.

Male: length, 16 to 18; wing, 14½; tail, 8½ to 9 inches.

Young: above *brown*, variegated with *rufous;* upper tail coverts brown or white; tail reddish, *with or without* about three wide fulvous bands. Beneath rufous or nearly white, with brown stripes.

No. 8780, (156.) North fork of the Platte R., Neb, Aug. 17, 1857. Young—length, 21; extent, 47; wing, 15 inches; iris brown, bill black, feet yellow.

No. 8236, (218.) Forks of the Platte R., Oct. 17, 1857. Old male in full plumage—length, 18. 50; extent, 42. 50; wing, 13. 50 inches. Iris and cere yellow, bill slate color, feet brown and yellow.

This hawk is easily distinguishable, even at a distance, by its large size, long wings and tail, small round head, and long legs. It is also the only kind commonly seen in the northern States sailing slowly over meadows and prairies, generally alighting on the ground, (where it also builds its nest.) It is commonly of a dark brown color, but old birds (after several years) become of a fine ash color above and white beneath, beautifully marked with bars and spots. This state of plumage is rarely seen, and younger birds are often found with nests and young.

The marsh hawk is abundant throughout the open districts of the Territory, especially in winter, and it builds there. I never saw but two specimens among hundreds, having the light blue color distinctive of the adult male. I found it no less common in California.

In a journey to Fort Laramie, Nebraska, I found this bird no less numerous from July to November, and noticed the curious fact that at least half of them were of the blue plumage. From this I infer that the older birds seek the far interior in preference to the seaboard, either from acquired experience of its greater safety, or for some other advantage which they find

there. The old birds of some other kinds are said to have the same habit of resorting to the interior, particularly during their periodical migrations.

This hawk feeds chiefly on mice and small birds, rarely disturbing the farmer's poultry, and is, doubtless, of much more benefit to him than injury.—C.

The marsh hawk, or hen harrier, I have found a frequent inhabitant of the neighborhood of all Oregon streams, being not only, as mentioned by Nuttall, found there in winter, but is also a constant summer resident. I procured one specimen, a male in the adult bluish-gray plumage, at Fort Dalles in the spring of 1855. Although I had constantly seen these birds during the two previous years of my residence in Oregon, I had never before met with it in its gray plumage, all that I had seen being in the immature state, and while flying showing a very conspicuous white patch upon the rump. Many specimens in the latter stage of plumage I saw in the summer of 1856 at Fort Steilacoom. Specimen 5851 (551) measured, length 21, extent 47 inches.—S.

Sub-Family AQUILINAE.—The Eagles.

HALIAETUS LEUCOCEPHALUS, Savigny.

The Bald Eagle; the White-headed Eagle.

Falco leucocephalus, Linn. Syst. Nat. I, 124, (1766.)

Falco pygargus, Daudin, Traite d'Orn, II, 62, (1800.)

Falco ossifragus, Wilson, Am. Orn. VII, 16, (1813.)

Haliaetus leucocephalus, Savig. Cuv. Reg. An. ed. 2, p. 326.

Haliaetus leucocephalus, (Linn.) Baird & Cassin, Gen. Rep. Birds, p. 43.

Figures.—Catesby's Carolina I, pl. I; Vieill. Ois. O'Am. Sept. I, pl. 3; Wilson Am. Orn. IV, pl. 36, VII, pl. 55; Aud. B. of Am., pl. 31, 126; oct. ed. I, pl. 14.

Sp. Ch.—Head, tail, and its coverts white; rest of plumage brownish black, edges of feathers paler.

Female: length, 35 to 42½; wing, 23 to 25; tail, 14 to 15 inches. Extent about 88 inches. *Male:* 30 to 34; wing, 20 to 22, tail 13 to 14 inches.

Young: entire plumage dark brown, paler on throat and edges of feathers; tail more or less mottled with white. Attains the adult plumage in four years.

This well known bird scarcely needs a special description here, although it seems probable that a larger species of similar plumage may be found in countries inhabited by this also.

(See Gen. Rep. on *H. Washingtonii.*)

No. 9130, (53,) Shoalwater bay, February 27, 1854; young female: length 37, extent 87.50. Iris brown.

No. 52 (lost) Vancouver, February 18, 1854; adult male: length 33, extent 79. Iris, bill, and feet yellow.

The white-headed eagle is one of the most abundant of the falcon tribe in Washington Territory, particularly along the Columbia river, and other smaller streams, as well as the salt water. I was astonished at their numbers on the day of my arrival in the Territory in June, 1853. As the steamer ascended the Columbia river, a light rain falling constantly, I could see three or four at any time, sitting on the gigantic spruces that lined the banks, occasionally sailing off, circling around overhead, uttering their shrill scream, as if to dispute our right to navigate the great river. Though their white head and tail made them clearly visible against the dark green background of foliage, they sat often so high above the river as to look no larger than crows, and their screams were only faintly audible. Excepting a few sea-ducks and gulls at the mouth of the river, the eagles were the only birds I saw that day, and the absence of fish-hawks, crows, &c., struck me as remarkable.

This eagle is a constant resident, and, I believe, lays its eggs as early as February, though I never examined a nest at that season. I never saw it dive for fish or pursue unwounded birds, but have seen it settle for a moment on the water to secure a dead fish, closing its wings. It is a great pest to the sportsman, being always on the lookout for wounded birds, which it seizes almost from his grasp. It will sometimes sit for hours on the beach among gulls, crows, and ravens, which are quite unconcerned at its presence.

The young of this species seems to prefer the seacoast, and is generally supposed to be another species by the name of "grey eagle." It seems to differ in the greater breadth of the wings and tail, which, however, depends on the form of the feathers only. The coloring is very variable, not only the head and tail, but the back and breast being mottled, and sometimes entirely white. These varieties might easily be mistaken for species before the regular change of plumage was fully demonstrated. During the journey northward to the 49th degree, I saw numbers of eagles along the Columbia, commonly sitting on some log or cliff over the water. In Santa Clara county, California, I saw a nest of this bird large enough to fill a wagon. It was built in a large sycamore tree, standing alone in the prairie, and but a short distance from several farm houses. On my shooting a magpie from the tree, one of the eagles came from a distance and flew round to reconnoitre, though, as it was November, they probably had no eggs or young in it. The farmers not having molested it, I suppose the eagles were not troublesome, and probably found enough to eat among the great numbers of cattle dying on those plains.

I have never seen this eagle about the high mountain tops, and on the plains east of the Rocky mountains it is a rare visitor.—C.

This noble looking bird is exceedingly abundant in Oregon and Washington Territories, and in certain localities, especially during the salmon season, may be found in great numbers. De Smet, in his work on "Oregon Missions," speaks of their abundance about the shores of several of the large lakes on the upper Columbia, where they find, during certain months of the year, an easy subsistence, owing to the vast numbers of dead and dying salmon which line the water margin. While crossing the continent with Governor Stevens' party in 1853 I succeeded in obtaining a pair of young birds alive, from an eyrie built in a tree on the borders of Lake Jessie, Minnesota. They were forwarded to the Smithsonian Inst'n, and deposited in the collection of living creatures kept for the amusement of the patients at the lunatic asylum near Washington city. On my canoe voyage from the Rocky mountains to Fort Vancouver, I frequently passed these birds, at times sitting alone, or in pairs, in the trees over the river banks, or perched on the high cliffs overhanging the wild streams of the mountains. They appeared quite tame and frequently permitted an approach within easy rifle shot. Sometimes one or two might be seen in company with a few little impudent looking crows, dividing the remains of a dead and putrid salmon which had been washed up on the shores of the Columbia. These dead salmon appear to afford the principal nourishment to the eagles, crows, and coyotes of that region.

Mr. Geo. Gibbs says that he has seen the present bird alight in deep water, and rest upon it like a gull.

The measurements of the Oregon specimens seem to be greater than those of the Atlantic. I think that this bird, in Oregon, does not depend much on the prey captured from the osprey, as the latter bird is not at all abundant there, but rather, as above stated, on the dead bodies of fish which are cast up on the shores of the coast, bays, and rivers, becoming thus vulture-

like in its habits—a truly mortifying character to be assumed by the representative of our national emblem.

The eyries of this bird are frequently found throughout Oregon, and are bred in, during successive seasons, year after year, as stated by various authors.

At times the settlers speak of seeing very large eagles—larger, they say, than the bald eagle. Perhaps these may be specimens of the *pelagicus* or *Washingtonii*. I have not yet been lucky enough to secure a specimen of either.

Captain Burns, of Port Discovery, (Puget Sound,) informed me that in the spring of 1856 he caught a young bird of this species, which he called, in common with the other settlers, a "gray eagle." This was reared as a pet, and became quite tame. At times the captain would take the young eagle on coasting voyages along Puget Sound. The bird would frequently leave the vessel on short excursions, generally, however, returning to it again, even when the schooner in sailing had altered its position several miles, and being never deceived so as to fly on board of other small craft, although many would be near by. Sometimes, however, the eagle would prefer returning to Captain B.'s house, on the bay of Port Discovery. At the time I was informed of this the bird had lived with the captain nearly a year, and manifested no desire to seek another home. About the house he was quite a terror to the pigs and small dogs, from which he remorselessly took any carrion or other delicacy which suited his palate.—S.

PANDION CAROLINENSIS, Bonaparte.

The Fish Hawk; The American Osprey.

Falco carolinensis, Gm. Syst. Nat. I, 263, (1788.)
Aquila piscatrix, Vieill. Ois. d'Am. Sept. I, 29, (1807.)
Pandion americanus, Vieill. Gal. Ois. I, 33, (1825.)
Falco haliaetus, Linn. Wilson, Am. Orn. V. 14.
Falco haliaetus, Linn. Aud. Orn. Biog. I, 415.
Pandion carolinensis, Bonap. Eur. and Am. Birds, p. 3.
Pandion carolinensis, (Gm.) Baird & Cassin, Gen. Rep. Birds, p. 44.

Figures.—Catesby's Carolina, I, pl. 2; Vieill. Ois. d'Am. Sept. I, pl. 4; Wilson, Am. Orn. V, 37; Aud. B. of Am. pl. 81: oct. ed. I, pl. 15; Nat. Hist. New York, Birds, pl. 8, fig. 18.

Sp. Ch.—Head and entire under parts white; stripe through the eye, top of head, and upper parts, deep brown; tail with about eight bands of blackish-brown; breast with numerous *cordate* and *circular* pale brownish *spots*.

Female: length, about 25; wing, 21; tail, 10½ inches.

Male: length, 22¼—23; wing, 19½; tail, 10 inches.

Young: above with pale tips to feathers; more numerous and darker spots on breast.

The fish hawk is common along the coast, arriving at Puget Sound by the middle of April, and building on dead trees near there and near the mouth of the Columbia river. I never saw them on the upper part of that river, though they probably ascend with the fall salmon. I did not see the eagle rob this hawk, though abundant in the same places. The reason may be that it can obtain plenty of food more honestly and with less trouble in that country. This hawk never troubles the farmers, and is generally unmolested, except by idlers and naturalists.—C.

A specimen of the osprey was shot, at Steilacoom, by Mr. George Gibbs, and presented to me. I have seen it also in the Rocky mountains. No. 5837 (531) Fort Steilacoom, October 2, 1856; length, 22½; extent, 62½; wing, 19½ inches.—S.

Family STRIGIDAE.—Owls.

Sub-family BUBONINAE.—Horned Owls.

BUBO VIRGINIANUS, Bonaparte.

Great Horned Owl.

Strix virginiana, Gm. Syst. Nat. I, p. 287, (1788.)

S. magellanicus, Gm. Syst. Nat. I. p. 286, (1788?)

Bubo virginianus, Bonap. Comp. List, p. 6.

B. virginianus, (Gm.) Baird & Cassin, Gen. Rep. Birds, p. 9.

B. arcticus, Swain. F. B. Am. Birds, p. 86, (1831.)

B. subarcticus, Hoy, Proc. Acad. Sc. Philad. VI, 212.

Figures.—Wilson, Am. Orn. VII, pl. 50, fig. 1; Aud. B. of Am. pl. 61: oct. ed. I, pl. 39; Nat. Hist. New York, pl. 10, fig. 22; Fauna Bor. Am. Birds, pl. 30.

Sp. Ch.—Very large; ear tufts long, erectile; color varying from nearly white to dark brown; above darkest, and mottled irregularly with *transverse* lines of pale ashy and reddish. Throat and neck *white*, breast with dark *stripes* other parts somewhat fulvous, mixed with brown and white.

Female: length, 21 to 25; wing, 14½ to 16; tail, 10 inches.

Male: length, 18 to 20; wing, 14 to 15; tail, 9 inches.

The largest horned or tufted owl in America, varying in size, though the smallest males are over eighteen inches long, and their wing fourteen inches. Usually dark-colored, and (*var. pacificus*) with an ash-colored face, while others (*var. atlanticus*) have it fulvous. The pale variety (*arcticus*) is sometimes nearly white, but more commonly yellowish. All of these forms are found in the Territory.

No. 9159 (—,) Okanagan R., Sept. 27, 1853. Length, 27; extent, 52 inches, (*var. pacificus.*)

The great horned owl is a common and constant resident in all parts of the Territory I have visited, but principally among dark forests, where it sits dozing through the day, unless discovered by some crow or other bird, when its chance for rest is gone, until the shades of night disperse its persecutors, and give it an opportunity of taking ample revenge.—C.

The great horned owl is very abundant about Puget Sound. I obtained fully half a dozen skins, all resembling in character the description given by Cassin of the variety *pacificus*. The aborigines near Fort Steilacoom, when they hear one of these birds uttering his deep, hooting sounds near their lodges at night, are much alarmed. As usual, they consider that it is a warning of the approach of death, or some other great calamity—thus showing another instance of the almost universal, superstitious dread, which, in various parts of the world, is inspired by birds of this family.

In July, 1856, I obtained two individuals alive, which, although fed and kindly treated for several months, abated not a whit their original ferocity. At the approach of any one—even their habitual feeder—they instantly manifested vindictiveness, rage, hatred, and defiance, and kept up a hissing noise, interrupted by loud snapping sounds, produced by "gnashing" their bills.

While in the Rocky mountains I found owls quite plentiful, and at night heard frequently the hooting of individuals of some large species, which, although kept up at about the same intervals as those produced by the present kind, were much more feeble.—S.

SCOPS ASIO, Bonaparte.

The Mottled Owl; the Screech Owl.

Strix asio, Linn. Syst. Nat. I, p. 132, (1766.)

Strix naevia, Gm. Syst. Nat. I, p. 289, (1788.)

Scops asio, Bonap. Eur. and N. Am. Birds, p. 6.

Scops asio, (Linn.) Baird & Cassin, Gen. Rep. Birds, p. 57.

Figures.—Catesby's Nat. Hist. Carolina I, pl. 7; Vieill. Ois. d'Am. Sept. I, pl. 21; Temm. pl. col. 80; Wilson, Am. Orn. pl. 19, fig. 1, pl. 42, fig. 1; Aud. B. of Am. pl. 97: oct. ed. I, pl. 40; Nat. Hist. New York, Birds, pl. 12, figs. 25, 26.

Sp. Ch.—A small tufted owl. In adult the upper parts *ashy brown*, with streakings and mottlings of brownish black and of cinereous. Below *ashy white*, striped with *black* and barred with *narrow black* lines; tail with about *ten* narrow cinereous bands.

Younger: nearly all upper parts pale brownish red, paler and white below; tail rufous, with brown bands.

Young: entirely barred with *ashy white* and *pale brown*; wings and tail pale *rufous*.

Length, in both sexes, 9½ to 10; wing, 7; tail, 3½ inches.

A specimen of this owl, in the mottled plumage, was obtained by me at Fort Vancouver, W. T.—S.

OTUS WILSONIANUS, Lesson.

The Long-eared Owl.

Otus Wilsonianus, Lesson, Traite d'Orn. I, p. 110, (1831.)
Baird and Cassin, Gen. Rep. Birds, p. 53.

Otus Americanus, Bonap. Comp. List, p. 7, (1838.)

Strix Americana, Gm. Syst. Nat. I, p. 288, (1788?)

Strix perigrinator, Bartram, Travels, p. 289, (1790?)

Figures.—Wilson, Am. Orn. VI, pl. 51, fig. 1; Aud. B. of Am., pl. 383: oct. ed. I, pl. 37; Nat. Hist. New York, Birds, pl. 11, fig. 24.

Sp. Ch.—Ear tufts long, above mottled, a *brownish black* hue predominating, mixed with ashy; breast pale *fulvous*, with dark *stripes* and narrow *bars;* eye nearly encircled with black; rest of face ashy; tail *brown*, with several irregular bands of ashy fulvous, and mottled.

Female: Length, 15; wing, 11 to 12½; tail, 6 inches. *Male* rather smaller.

No. 9143, (19,) John Day's river, Oregon Territory, November 12, 1853. Length, 14.50; extent, 38. Female.

No. 8,243, (225,) 100 miles east of Fort Kearney, Nebraska, October 28, 1857. Length, 14.50; extent, 37.50; wing, 12. Iris, yellow; bill, bluish; toes, gray.

The long-eared owl I only obtained once, on the banks of the Columbia, east of the Dalles, November, 1853. In the same desolate and barren region, where the only trees are a few small willows along the banks of the river, several species of owls are found, which, apparently, have deserted their favorite forests for the sake of the hares and mice abounding in some parts of this region. The willows scarcely diminish the brightness of the sunlight, which strikes down on them from morning to night.—C.

I obtained a bird of this species in a dense thicket, on a small branch of Milk river, Nebraska. I suppose that, owing to the scarcity of hollow trees in that vicinity, the umbrageous shelter of thick brush is used as a substitute. The owl appeared stupid and sleepy, and allowed a very near approach.—S.

BRACHYOTUS CASSINII, Brewer.

The Short-eared Owl.

Brachyotus Cassinii, Brewer, Proc. Boston Soc. N. H. Baird and Cassin, Gen. Rep. Birds, p. 54.

Strix brachyotus, Forster, Phil. Trans. London, LXII, p. 384, (1772.)

Brachyotus palustris americanus, Bonap. Consp. Av. p. 51, (1849.)

FIGURES.—WILSON, Am. Orn. IV, pl. 33, fig. 3; Aud. B. of Am. pl. 410: oct. ed. I, pl. 38; Nat. Hist. New York, Birds, pl. 12, fig. 27.

SP. CH.—About the size of the last, but easily distinguished by its very short ear tufts, (nearly concealed by the feathers,) and by its buff or pale fulvous color. No. —, (17,) Spokane Plain, October 30, 1853; male. Length, 15.50; extent, 38; iris, cere, and toes yellow. No. 8791, (164,) North Fork, Platte river, Nebraska, August 20, 1857. Length, 14; extent 41.50; wing, 12 inches.

I first met with the marsh owl on the Great Spokane Plain, where, as in other places, it was commonly found in the long grass during the day. In fall and winter it appears in large numbers on the low prairies of the coast, though not gregarious. On cloudy days it sometimes hunts, flying low over the meadows, like the marsh hawk, but is, properly, nocturnal. This owl is not often persecuted by small birds, though it no doubt often makes a meal of them. I have not observed it during summer in the Territory.—C.

A bird, apparently the short-eared owl, was seen by me in November, 1858, on a marsh near a small lake, about three miles below Fort Dalles.—S.

Sub-Family SYRNINAE.—The Gray Owls.

SYRNIUM CINEREUM, Audubon.

The Great Gray Owl.

Strix cinerea, GM. Syst. Nat. I, p. 291, (1788.)

Strix acclamator, BARTRAM, Travels, p. 289, (1790.)

Syrnium cinereum, AUD. Synop, N. A. Birds, p. 26.

Syrnium cinereum, (GM.) BAIRD & CASSIN, Gen. Rep. Birds, p. 56.

FIGURES.—Fauna Bor. Am. pl. 31; Aud. B. of Am. pl. 351: oct. ed. I, pl. 35; Nat. Hist. New York, Birds, pl. 13, fig. 29.

SP. CH.—The largest owl of North America, and not easily to be mistaken for any other, being untufted, and of a nearly uniform dark gray color, mottled and barred with ashy white. No. 9138 (80,) Shoalwater bay, June 16, 1854. Length, 25; extent, 56 inches; iris, yellow. Female.

The *great cinereous owl* I found common only in one locality near the mouth of the Columbia river. They frequented a brackish meadow, partially covered with small spruce trees, in which they sat concealed during the day, and frequently made short flights from one to another. Though there were many jays and other birds about, they did not attack these owls, as they would certainly have done with the horned owl. The specimen having been shot in June, I have no doubt that some of these owls are constant residents and build near that locality.—C.

NYCTALE ACADICA, Bonaparte.

Saw-whet Owl.

Strix acadica, GM. Syst. Nat. I, p. 296, (1788.)

Strix acadiensis, LATH. Ind. Orn. I, pl. 65, (1790.)

"*Strix passerina*, LINN." Wilson, Am. Orn. IV, p. 66.

Nyctale acadica, BONAP. Eur. & N. Am. Birds, pl. 7.

Nyctale acadica, (GM.) CASSIN, Gen. Rep. Birds, p. 58.

FIGURES.—Lath. Gen. Syn. I, pl. 5, fig. 2; Wilson, Am. Orn. IV, pl. 34, fig. 1; Aud. B. of Am. pl. 199; oct. ed. I, pl. 33; Nat. Hist. New York, Birds, pl. 11, fig. 23.

Small, wings long, tail short. Upper parts reddish brown, tinged with olive; head in front with fine lines of white, and on the neck behind, rump, and scapulars, with large partially concealed spots of white. Face ashy white; throat white; under parts ashy white, with longitudinal stripes of pale reddish brown; under coverts of wings and tail white. Quills brown,

with small spots of white on their outer edges, and large spots of the same on their inner webs; tail brown, every feather with about three pairs of spots of white; bill and claws dark; irides yellow.

Total length about 7½ to 8 inches; wing, 5½ inches; tail, 2¾ to 3 inches; sexes nearly the same size and alike in colors.

Easily distinguished from the other little owls without ear tufts by the few white spots on its tail feathers, (about three pairs on each.) It is the smallest owl of the eastern States, but larger than one other western species.

At Vancouver, February 3, 1854, I found one dead and lying on a log in the woods. I could find no cause for its death, unless it was from starvation, it being extremely emaciated and its stomach empty. The weather being the coldest known there for many years, and the ground covered with snow, there were not many birds about, and mice must have been difficult to obtain.—C.

A fine specimen of this little owl I obtained at the Dalles of the Columbia, on the north side, in December, 1853. It was several miles from the timbered region, and I suppose lived in the basaltic cliffs of the vicinity.—S.

Sub-Family ATHENINAE.—The Bird Owls.

ATHENE HYPUGÆA, Bonaparte.

The Burrowing Owl.

Strix cunicularia, Bonap. Am. Orn. I, p. 68, (*hypugœa*, in a note on p. 72,) (1825.)

Athene socialis, Gambel, Proc. Acad. Philada. III, p. 47, (1846.)

Athene hypugœa, Bonap. Consp. An. p. 39.

Athene hypugœa, (Bonap.) Baird & Cassin, Gen. Rep. Birds, p. 59.

Figures.—Bonap. Am. Orn. I, pl. 7, fig. 2; Aud. B. of Am. pl. 432, fig. 1: oct. ed. I, p. 31, (upper figure.)

Sp. Ch.—Above light ashy brown, with numerous partly-concealed white spots. Throat white; a collar of dark brown and white below this; then a large white patch; lower parts pale brown or yellow; quills much spotted; tail with five or six bands of yellowish white.

Varying in general tint from very pale to light reddish brown; the pale plumage very common, and having a faded appearance.

No. 8767, (140,) 35 miles west of Fort Kearney, August 3, 1857. Length, 9; extent, 23. 50; wing, 6 inches. Iris, bright yellow; bill, grayish.

This specimen is from the most eastern locality where this bird has been observed. I saw it there in great numbers on the plains of Nebraska, and did not observe any difference in habits between this and the bird of California.—C.

I shot a specimen of this owl at the mouth of a "prairie dog's" hole, near Fort Benton, Nebraska.—S.

ATHENE CUNICULARIA, Bonaparte.

Western Burrowing Owl.

Strix cunicularia, Molina, Sagg. Stor. Nat. Chili, (1782.)

Strix californica, Aud. B. of Am. pl. 432, fig. 2, (name on plate.)

Athene patagonica, Peale, Zool. U. S. Ex. Exp. Vincennes, Birds, p. 78, (1848.)

Athene cunicularia, Bonap. Eur. and N. Am. Birds, p. 6.

Athene cunicularia, (Mol.,) Baird & Cassin, Gen. Rep. Birds, p. 60.

Figures.—Aud. B. of Am. pl. 432, fig. 2: oct. ed. I, pl. 31, (lower figure.)

Sp. Ch.—Distinguished from the burrowing owl of the plains east of the Rocky mountains chiefly by its larger size, more full feathering of the tarsus, and longer legs.

No. 5896, Santa Clara, Cal., November 5, 1855.

No. 5897, Santa Clara, Cal., November 5, 1855. Length, 9.50 inches; extent, 25. Iris, yellow; bill, horn color; toes, gray.

Although obtained by Dr. Suckley at Fort Dalles, I met with none of them in the plains north of the Columbia river. There is little doubt, however, of their being found there earlier in summer than I visited that part of the Territory.

In California this owl lives in the vacant burrows of the California "ground squirrel," (*Spermophilus Beecheyi.*) I never saw or heard of any burrowing animal as large as this north of the Columbia, except the badger.—C.

Specimens of this bird I obtained at Fort Dalles. As there are no prairie dogs at Fort Dalles, and but few burrowing animals except the *Spermophilus Douglassii*, or prairie squirrel, whose burrows are too small for the entrance of this bird, I am inclined to think that their abodes in that vicinity are more among the fissures and cracks of the basaltic rock, so abundant there, rather than in the soft earth. As to the habits of this bird in Oregon I can say nothing, as the specimens I obtained were killed by others. Abundant at the Dalles and probably throughout the timberless interior of both Oregon and Washington, but not seen by me *west* of the Cascade mountains.—S.

GLAUCIDIUM GNOMA, Wagler.

The Pigmy Owl.

Glaucidium gnoma, Wagler, Isis, XXV, p. 275, (1832.)—Baird & Cassin, Gen. Rep. Birds, p. 62.

"*Strix passerinoides*, Temm." Aud. Orn. Biog. V, p. 271, pl. 432, figs. 4, 5: octavo edition, I, pl. 30.

"*Strix infuscata*, Temm." Cassin, B. of Cal. & Texas, I, p. 189.

Glaucidium californicum, Sclater, Proc. Zool. Soc. London, 1857, p. 4.

Sp. Ch.—The smallest of North American owls, and well marked by its dark brown back, dotted with small round spots of dull white. Female largest, and with rather larger spots.

No. 9162, Shoalwater bay, November 1, 1854. *Female:* length, 7.50; extent, 14 inches. Iris yellow; bill and feet pale yellow, the former slightly tinged with green.

This (the smallest owl found in the Territory) I have only seen once, though it seems to be not very uncommon. On the first of November, 1854, I observed it among a flock of sparrows, which did not seem at all frightened by its presence. For some time I thought it was one of them, though its large head and owl-like flight seemed to me strange. It was plainly diurnal in habits, not seeming to seek any shelter from the sunshine. Its stomach contained only insects, and it is probable that it does not often attack birds.—C.

I have obtained two specimens of this owl at Puget Sound, where it seems to be moderately abundant. It appears to be diurnal in its habits, gliding about in shady situations in pursuit of its prey. I saw a bird of this kind, about mid-day, in a shady alder swamp near Nisqually. It flitted noiselessly past me several times, alighting near by, on a low branch, as if to examine the intruder. It seemed quite tame and entirely unsophisticated. As I was hunting deer at the time I refrained, reluctantly, from shooting it. I noticed that, in flying, the tail was kept rather widely spread. Near a small lake, in the neighborhood of Fort Steilacoom, I frequently heard the voice of a small owl, the notes of which were subdued and clear, like the low, soft notes of a flute. As the only *small* owl which I ever saw in the neighborhood belonged to this species, it is probable that the sounds I heard emanated from an individual of the kind.—S.

Family PICIDAE.—The Woodpeckers.

PICUS HARRISII, Aud.

Harris' Woodpecker.

Picus harrisii, Aud. Orn. Biog. V, 1839, 191; pl. 417.—Ib. Syn. 1839, 178 —Ib. Birds America, IV, 1842, 242; pl. 261, (dark-bellied variety.)—Nuttall, Man. I, 2d ed. 1840, 627.—Baird, Gen. Rep. Birds, p. 87.

? Picus inornatus, Licht. (Bon. Consp.)

Picus (Trichopicus) harrisii, Bp. Consp. Zyg. Aten. Ital. 1854, 8.

Sp. Ch.—Above black, a white stripe down the back. The only white spots on the surface of the folded wings are seen on the outer webs of the primaries and outer secondaries, (none on tertials.) Beneath whitish, with faint streaks on the side of the body. Two white and two black stripes on each side of the head; the latter confluent with the black of the neck, the upper white stripe nearly confluent. Three outer tail feathers with the exposed portions white. Length, 9.75 inches; extent, 16 inches; wing, 5 inches. Male, with a nuchal scarlet crest covering the white of the back of the head.

Size and general appearance that of the hairy woodpecker, *Picus villosus*. Iris, hazel; feet, gray.

Hab.—From the Pacific coast to the eastern slope of the Rocky mountains.

Harris' woodpecker is the most abundant species in the Territory, being found on both sides of the Cascade mountains, frequenting the lower parts of the great coniferous trees. It is a constant resident, and in May burrows out a nest in a dead tree sometimes only four feet from the ground. In cries and habits it is so exactly like the larger "sapsucker" of the Atlantic States, that were there not constant and unchangeable differences in plumage it would be taken for the same species.—C.

Quite abundant. Obtained at Fort Dalles, where it is found among the true *pines*, and at Fort Steilacom, among the *firs*, (A. Douglassii.) It is a winter resident in both localities.—S.

PICUS GAIRDNERI, Aud.

Gairdner's Woodpecker.

Picus gairdneri, Aud. Orn. Biog. V, 1839, 317.—Ib. Syn. 1839, 180.—Ib. Birds Amer. IV, 1842, 252, (not figured.)—Baird, Gen. Rep. Birds, p. 91.

Picus meridionalis, Nutt. Man. I, 2d ed., 1840, 690, (not of Swainson.)

Sp. Ch.—Very similar in size and color to *P. pubescens;* darker. Larger wing coverts, and more exposed tertials, either pure black, or with but occasional spots on the outer web in the latter. Black with a white median stripe. Side of head with two white and two black stripes. Two outer tail feathers white, with two bands of black at the end. Male with a scarlet occipital band. Length, $6\frac{3}{4}$ inches; extent, $11\frac{1}{2}$; wing, $3\frac{3}{4}$, generally rather less. Iris, reddish brown; feet, bluish black; bill, gray.

Hab.—With *P. harrisii*, from Pacific coast to eastern base of Rocky mountains.

The remarks applied to Harris' can be also used respecting the close affinity of "Gairdner's woodpecker" to its eastern analogue, commonly known as the *little* sapsucker, and to naturalists as the "downy woodpecker," to distinguish it from the larger species, which is rather inappropriately called the "hairy woodpecker." This little bird seems purposely adapted for the business of ridding the smaller forest trees of the insects which infest their bark, as its larger relative is for its constant labor at the bark of the larger trees. "Gairdner's" woodpecker is always found among the oaks, maples, and alders, industriously pecking the bark at all hours of the day, occasionally uttering its shrill cry as it flies from one to another. In habits, flight, and cries, it is a perfect miniature of the preceding, besides resembling so closely the small

eastern species. The only difference appears to be in slight but constant distinctions of plumage. I observed both of these species in California, where they were quite common. In the absence of the larger coniferæ, Harris' woodpeckers frequented the oaks, &c., as it occasionally does in the north.—C.

Extremely common on the lower Columbia, especially among the willow trees lining its banks. They are winter residents, and in these situations very abundant. In January, 1856, I found them so abundant among the willows growing on the islands in the delta of the Willamette, that I readily obtained eight in the space of an hour. At this season they are very unwary, giving very little heed to the presence of man; scarcely allowing the near discharge of a gun to interfere with their busy search for food.—S.

PICUS ALBOLARVATUS.

White-headed Woodpecker.

Leuconerpes albolarvatus, CASSIN, Pr. A. N. Sc. V, Oct. 1850, 106. California.

Melanerpes albolarvatus, CASSIN, Jour. A. N. Sc, 2d series, II, Jan. 1853, 257; pl. 22.—NEWBERRY, Zool. Cal. and Oreg. Route, 9, Rep. P. R. R. VI, 1857.

Leuconerpes albolarvatus, BONAP. Consp. Zyg. At. Ital. 1854, 10.

Picus (Xenopicus) albolarvatus, BAIRD, Gen. Rep. Birds, p. 96.

SP. CH.—Fourth and fifth quills equal and longest. Entirely bluish black, excepting the head and outer edges, with the entire basal portion, of the primaries, which are white. Male with a narrow line of red on the nape.

Length about 9 inches; extent, 16 inches; wing, 5¼. Iris brown.

Hab.—Cascade mountains of Oregon and southward into California.

The white-headed woodpecker I have only met with once. This was in a pine grove near the Spokane river, October 28, 1853. It was in company with Harris' woodpecker, and several species of titmice, nuthatches, &c. In habits it seemed closely to resemble the other small woodpeckers. The country east of the Cascade mountains, resembling in many parts the dry, open forests of California, seems to be suited to the habits of many species of birds, which, in migrating north, shun the dark, damp forests of the lower Columbia. Several instances of this fact occurred to me besides the present.—C.

SPHYROPICUS RUBER, Baird.

Red-breasted Woodpecker.

Picus ruber, GM. Syst. Nat I, 1788, 429.—WAGLER, Syst. Av. 1827, No. 151.—AUD. Orn. Biog. V, 1839, 179; pl. 416.—IB. Birds Amer. IV, 1842, 261; pl. 266.

Melanerpes ruber, RICH. List, Pr. Br. Assoc. for 1835.—BONAP. List. 1838.—IB. Consp. 1850, 115.

Pilumnus ruber, BON. Consp. Zyg. Aten. Ital. 1854, 8.

Picus flaviventris, VIEILLOT, Ois. Am. Sept. II, 1807, 67.

Sphyrapicus ruber, BAIRD, Gen. Rep. Birds, 104.

SP. CH.—Fourth quill longest; third intermediate between fourth and fifth. Bill brown wax color. Head and neck all round and breast carmine red. Above black, central line of back from nape to rump spotted with whitish; rump, wing coverts, and inner web of the inner tail feathers white, the latter with a series of round black spots. Belly sulphur yellow, streaked with brown on the sides. Narrow space around and a little in front of the eye black. A narrow yellowish stripe from the nostrils, a short distance below and behind the eye. Length, about 9. 50 inches; extent, 15. 75; wing, 5 inches; tail, 3. 40 inches. Iris in bill and feet pale brown.

Hab.—Pacific slope of the United States.

The crimson-headed woodpecker, though it is colored somewhat like the red-head of the Atlantic States, can scarcely be considered analogous to it, as it appears to differ much in habits.

I have only met with them three times, in spring and fall, when they were very shy, silent, and retiring, remaining among the dense tops of the dark forest trees. Whether it resides and breeds in the Territory I have had no chance of observing.—C.

I have seen but one specimen of this species. It is, probably, for the most part, confined to the close vicinity of the coast.—S.

HYLATOMUS PILEATUS, Baird.

Black Wood Cock; Log Cock.

Picus pileatus, Linn. Sys. Nat. I, 1766, 173.—Vielliot, Ois. Am. Sept. II, 1807, 58; pl. cx.—Wilson, Am. Orn. IV, 1811, 27; pl. xxix, f. 2.—Wagler, Syst. Av. 1827, No. 2.—Aud. Orn. Biog. II, 1834, 74: V, 533; pl. 111.—Ib. Birds Amer. IV, 1842, 266; pl. 257.

Picus (Dryotomus) pileatus, Sw. F. Bor. Am. II, 1831, 304.

Dryotomus pileatus, Bp. List. 1838.

Dryocopus pileatus, Bonap. Consp. Av. 1850, 132.

Dryopicus pileatus, Bon. Consp. Zyg. Aten. Ital. 1854, 8.

Hylatomus pileatus, Baird, Gen. Rep. Birds, p. 107.

Sp. Ch.—Fourth and fifth quills equal and longest; third intermediate between sixth and seventh. Bill blue black. General color of body, wings, and tail dull greenish black. A narrow white streak from just above the eye to the occiput; a wider one from the nostril feathers (inclusive) under the eye and along the side of the head and neck; sides of the breast, (concealed by the wing,) axillaries, and under wing coverts, and concealed bases of all the quills, with chin and beneath the head, white, tinged with sulphur yellow. Entire crown from the base of the bill to a well developed occipital crest, as also a patch on the ramus of the lower jaw, scarlet red. A few faint white crescents on the sides of the body and on the abdomen. Length, about 18 inches; extent, 29; wing, 9½. Bill bluish dusky, paler below.

Female without the red on the cheek, and the anterior half of that on the top of the head replaced by black.

Hab.—North America from Atlantic to Pacific.

The pileated woodpecker, or "log cock," is an abundant and constant resident in the forests of the Territory. Early in April I discovered a pair on Whitby's island, burrowing out a hole for their nest in a dead trunk about 30 feet from the ground. They worked alternately, and were very watchful, keeping perfectly silent while they heard any noise near by. I only found the place by noticing chips on the bushes below, and, after watching silently for some time, one of them began to work, now and then protruding its bill full of chips, and, after cautiously looking round, dropping them.

Their shy and retiring habits are in strong contrast with those of the flicker, which often builds near dwellings and is much more familiar. Their loud call is, however, quite similar.—C.

The log cock is abundant in the vicinity of Fort Steilacoom during summer.—S.

MELANERPES TORQUATUS, Bonap.

Lewis' Woodpecker.

Picus torquatus, Wilson, Am. Orn. III, 1811, 31; pl. xx.—Wagler, Syst. Av. 1827, No. 82.—Aud. Orn. Biog. V, 1839, 176; pl. 416.—Ib. Birds Amer. IV, 1842, 280; pl. 272.

Melanerpes torquatus, Bp. Consp. 1850, 115.—Heermann, J. A. N. Sc. Phil. 2d ser. II, 1853, 270.—Newberry, Zool. Cal. & Or. Route, 90; in P. R. R. Surv. VI, 1857.—Baird, Gen. Rep. Birds, p. 115.

Picus montanus, Ord, in Guthrie's Geog. 2d Am. ed. II, 1815, 316.

Sp. Ch.—Feathers on the under parts bristle-like. Fourth quill longest; then third and fifth. Above dark glossy green. Breast, lower part of the neck and a narrow collar all round hoary grayish white. Around the base of the bill and sides of the head to behind the eyes, dark crimson. Belly blood red, streaked finely with hoary whitish. Wings and tail entirely

uniform dark glossy green. Female with the markings more obscure. Length about 10.75 inches; extent, 21; wing, 6.50. Female smaller. Iris brown, bill black, feet gray. Tongue, when drawn out to its fullest extent, projects 1.50 inch beyond bill.

Hab.—Western America from Black hills to Pacific.

The "collared" woodpecker, called also "Lewis'," in honor of the indefatigable explorer of the northwest, is one of the most beautiful of all the species, and perhaps, of all, the least like a woodpecker in its habits. It is abundant during summer in all the interior districts, never approaching the cooler coast, where few of the trees grow which it prefers to inhabit. It arrives at Puget Sound early in May, and some remain during mild winters in the Territory, though in the very cold winter of 1853–'54 none remained at Vancouver. It seems to enjoy the hottest weather, and at mid-day may often be seen perched on a dry limb, from which it will sail off in pursuit of insects, and return, circling and flapping, to its perch. It also sometimes glides down to the ground after grasshoppers, and searches carefully among the branches and leaves for insects, disdaining to toil for its food like its laborious relatives, at least during summer. In winter it is probably compelled to work, after its favorite autumn food of berries is gone, but at other times it rarely ever raps on the trees. So little do its habits resemble those of the genus, that Nuttall compares the blackish flock of young in fall to the English jackdaw. It, however, burrows holes for its nest, at all heights from the ground, commonly in a dead tree. Its brilliant and soft plumage resembles more that of some tropical bird than the plain woodpeckers which are its companions in this northern climate. As it wheels and flutters slowly around the trees, the brilliant metallic green and rich carmine flash in the sun like the fiery tints of the humming bird. Its flight is always very different from that of other woodpeckers. Besides that above described, it has a travelling flight, which, instead of being a succession of undulating and rapid movements, is rather labored and steady flapping, somewhat like that of the jay. The notes of this bird seem to be few; a harsh call, rarely uttered in summer, when it seeks concealment for itself and nest, is quite unlike any other woodpecker's cry. The flocks of young, which in fall associate together to numbers of eight or ten, are more noisy, though even then quiet compared to the flicker. The Californian woodpecker, as I have seen it in the autumn, resembles this bird somewhat in habits, but seems not to feed so much on fruit, and in cries, flight, and habits to resemble much more the common woodpecker. In brilliancy and richness of plumage it however equals but does not surpass this species.—C.

Lewis' woodpecker is very abundant throughout the more open portions of the timbered region of the northwest coast, preferring oak "openings" and groves. At Fort Dalles, on the Columbia, they are extremely numerous, not only breeding there during summer, but also found as winter residents. Their breeding places are generally holes in oak and other trees, which, from the appearances of those I have examined, seem as if they had been excavated for the purpose. The species is also found at Puget Sound, but is much less abundant there than on the Columbia near Fort Dalles. At the latter place they are constant winter residents. They have many habits in common with the various species of their relatives of the genus *Colaptes*. They seem in winter to be semi-gregarious, flying singly, yet still keeping more or less in each other's company. Their flight at this season is high and very erratic, resembling much, in its characteristic peculiarities, that of the swallow. On warm days they keep up a lively chattering noise, unlike, in character, that of any other woodpecker that I have heard. During the cold season they are so shy that it is difficult to shoot them, as at the least alarm

they betake themselves to the tops of the highest trees in the vicinity. They at that season subsist principally upon the larvæ of insects, found in the cracks and fissures of the "red pine" of the country. I dissected a specimen killed at Fort Dalles, January 9, 1855, finding the coats of the stomach (gizzard) very thick and muscular, its cavity filled with the white larvæ of insects, together with fine gravel. The thick nature of the coats of the stomach renders it well adapted to the digestion of berries and seeds, which probably form a large portion of the bird's sustenance during the warmer months.—S.

COLAPTES MEXICANUS, Swainson.

Red-shafted Flicker.

Colaptes mexicanus, Sw. Syn. Mex. Birds, in Philos. Mag. I, 1827, 440.—Ib. F. Bor. Am. II, 1831, 315.—Newberry, Zool. Cal. & Or. Route, 91; P. R. R Rep. VI, 1857.—Baird, Gen. Rep. Birds, p. 120.

Picus mexicanus, Aud. Orn. Biog. V, 1839, 174; pl. 416.—Ib. Birds America, IV, 1842, 295; pl. 274.

Colaptes collaris, Vigors, Zool. Jour. IV, Jan. 1829, 353.—Ib. Zool. Beechey's Voy. 1839, 24; pl. ix.

Picus rubricatus, Wagler, Isis, 1829, v, May, 516. "(Lichtenstein Mus. Berol.)"

Sp. Ch.—Shafts and under surfaces of wing and tail feathers orange red. A red patch on each side the cheek; nape without red crescent; sometimes very faint indications laterally. Throat and stripe beneath the eye bluish ash. Back glossed with purplish brown. Female without the red cheek patch. Length about 12.50 to 14 inches; extent, 21 inches; wing over 6½ inches. Female smaller. Iris dark brown, bill black, feet greyish.

Additional Characters.—Spots on the belly, a crescent on the breast, and interrupted transverse bands on the back, black.

Hab.—Western North America from the Black Hills to Pacific.

This bird, called "highholder," "flicker," or "clape," by emigrants from various parts of the States, and even "yellow hammer" by some, though it has not a particle of yellow in its plumage, is so abundant along the western coast, as its closely allied cousin, known by the same names, is on the eastern side of the Mississippi. It also resembles that bird so exactly in habits and notes that, as Nuttall observed, the description of one will apply with exactness to the other. It is a constant resident in Washington Territory, at least west of the Cascade mountains. I observed them already burrowing out the holes for their nests in April at the Straits of De Fuca. About June 1st, I found a nest containing seven young nearly fledged, which already showed in the male the red moustache, distinguishing it from the female. Their food consists at all times more of insects and fruits than of the larvæ found by other woodpeckers in trees, and they spend much of their time on the ground.—C.

Extremely common in the timbered districts of Washington Territory. Habits, voice, calls, &c., precisely similar to those of the yellow hammer of the eastern States.

Woodpeckers, as a group, are abundantly represented in both of our northwest Territories. The most abundant species, I think, is the *C. Mexicanus;* next the *P. Gardneri;* Harris' and Lewis' stand next and about equal; *P. Ruber* and *Melanerpes albolarvatus* about equal, but *scarce.* I have never seen the Californian woodpecker "*Melanerpes formicivorus*" so far north as Oregon, although there are many acorn-bearing oaks, especially at Fort Dalles, to afford it winter subsistence. Still I am by no means prepared to say that the species does not extend into Oregon; on the contrary, I am inclined to think that it will yet be found as far north as the Columbia river.—S.

ORDER III. INSESSORES. Perching Birds.

Family TROCHILIDAE. The Humming Birds.

SELASPHORUS RUFUS, Swainson.

Red-backed Humming Bird.

Trochilus rufus, Gmelin, Syst. Nat. I, 1788, 497.—Aud. Orn. Biog. IV, 1838, 555; pl. 372.

Selasphorus rufus, Swainson, F. Bor. Am. II, 1831, 324.—Ib. Aud. Birds Am. IV, 1842, 200; pl. 254.—Baird, Gen. Rep. Birds, p. 134.

? *Trochilus ruber*, L.—Orn, I, 1788, 499. (Fide Bonaparte.)

Sp. Ch.—Tail strongly cuneate and wedge-shaped. Upper parts, lower tail coverts, and breast cinnamon. A trace of metallic green on the crown, which sometimes extends over the back, never on the belly. Throat coppery red, with a well developed ruff of the same; below this a white collar. Tail feathers cinnamon, edged or streaked at the end with purplish brown.

Female with the rufous of the back covered or replaced with green; less cinnamon on the breast. Traces only of metallic feathers on the throat. Tail rufous, banded with black and tipped with white; middle feathers glossed with green at the end. Tail still cuneate. Length of male, 3.50; wing, 1.55; tail, 1.30.

Hab.—West coast of North America, and across from Gulf of California to the Upper Rio Grande valley.

The Nootka Sound humming bird is abundant in the western portions of both Oregon and Washington Territories, and Vancouver Island. It also, probably, extends as far north as Russian America. It is, indeed, a beautiful little creature, when alive favorably comparing with even the most elegant species of this universally admitted brilliant tribe of birds. Considering the size of the species, they are very hardy, being one of the earliest of the migratory birds to arrive in spring. In 1856, at Fort Steilacoom, (latitude 47° 12′ north,) they arrived from the south about April 10, the first one I obtained being on the 11th of that month. The Straits of Juan de Fuca, lying between Vancouver Island and the northern portion of Washington Territory, are about fifteen miles wide. To reach Nootka Sound, on the north side of Vancouver Island, they are obliged to fly across the straits. Captain Boyling, of the brig Willimantic, informed me that while he was sailing through the straits in September, 1856, seven of these little humming birds, of different sizes, flew on board his vessel. This would indicate that the commencement of the southern migration is in that month; probably more induced by the scarcity of flowers than by cold, which is generally not much felt before the middle of October, and in some seasons not until December. In Washington Territory this species commences to incubate about May 10, at which time, and just before, the most fierce and angry battles are continually occuring between the males. These battles were generally fought by "tilting" at each other at "full speed," all the time keeping up loud and vociferous squeaks and buzzing sounds, resembling somewhat those produced by the common Atlantic species under similar circumstances. A nest and eggs of this species I obtained at Newaukam prairie, five miles from Fort Slaughter, Washington Territory, May 23, 1856. The female, while on the nest, allowed a very near approach, so near as almost to admit being grasped by my hand. She had, what I noticed in another female specimen, and what is also referred to by Nuttall, a rudimentary metallic ruff on the throat. The nest was situated in a forked branch of a "snowberry" bush, and was composed, principally, of fine green moss, lined internally with the delicate floss of the cotton-wood poplar, and externally bordered in relief, most artistically, with rock lichens, apparently attached for no other purpose than to beautify.

Nest.—Diameter of cavity at entrance ..... 10 lines.
Depth at the centre ..... $7\frac{1}{2}$ "
Diameter of the *whole nest* across the top ..... 2 inches.
Height of the *whole nest* ..... 1 inch 5 lines.

Eggs, two; *white*, nearly equally blunt at both ends; weight of both eggs, about 13 grains—*i. e.*, about $6\frac{1}{2}$ grains each, although there was a slight difference in their sizes. Length of each, about $5\frac{1}{2}$ lines. Transverse diameter, nearly 4 lines. They were almost hatched. The nest, with its contents, I sent to the museum of the Smithsonian Institution.

Measurement and notes concerning particular specimens obtained in 1856, at Fort Steilacoom, Puget's Sound, Washington Territory:

April 11. No. 311. *S. rufus.* ♂. Length, $3\frac{11}{12}$; extent, $4\frac{1}{4}$. From tip of bill to angle of eye, $\frac{7}{8}$ of an inch.

April 18. No. 312. *S. rufus.* ♂. Length, $4\frac{1}{16}$; extent, $4\frac{1}{8}$. Bill to angle of eye, $\frac{7}{8}$. Weight of bird, 45 grains.

April 28. No. 330. ♀. Length, $3\frac{7}{8}$; extent, $4\frac{1}{16}$. Bill, $\frac{6}{8}$. Bill larger than usual. Bright metallic luster on the collar as before noticed. (Vide Nuttall's querys.)—S.

The Nootka humming bird is very abundant in Washington Territory, reaching the Straits of De Fuca as early as March 17th, when I saw them in considerable numbers. They seem to follow the blossoming of the red-flowered currant, which abounds in the fir forests, and is the first to open in abundance enough to supply them with food. This begins to bloom at the Columbia river about March 10.

In appearances and habits this bird much resembles the ruby-throat, from which the female and young are difficult to distinguish. But the male, besides its peculiar livery, has a very remarkable habit when a stranger or wild animal approaches its nest, and even at other times, of rising to a great height in the air and then darting down perpendicularly, producing a hollow rushing sound, (called "bleating" by Nuttall,) analogous to that made by the night hawk in a similar manner, but of a sharper tone. In both cases it is probably produced by the wings. I never obtained but one nest, which was built on a small bush a few feet from the ground, and was composed of hairs and cotton-like vegetable materials. It contained nothing at the time. In July, there being few flowers in the lower country, they seek the mountain summits, and I found them abundant in August at a height of 5,800 feet above the level of the sea, where, at the same time, ice formed nightly at our camp. They all leave the Territory in September, and, I think, winter in California, where I saw humming birds in December feeding among the blossoms of another species of flowering currant, then also the harbinger of early spring.—C.

Family CYPSELIDAE. The Swifts.

CHAETURA VAUXII, DeKay.

Oregon Swift.

Cypselus vauxii, Townsend, J. A. N. Sc. VIII, 1839, 148, (Col. river.)—Ib. Narrative, 1839.

Chaetura vauxii, DeKay, N. Y. Zool. II, 1844, 36.—Baird, Gen. Rep. Birds, p. 145.

Acanthylis vauxii, Bonp. Comptes Rendus, XXVIII, 1854; notes Delattre, 90.—Cassin, Ill. I, 1855, 250.—Newberry, Zool. Cal. and Or. Route, 78; P. R. R. Surv. VI, 1857.

Sp. Ch.—Light sooty brown; rump and under parts paler; lightest on the chin and throat. Length, 4.50 inches; wing, 4 75; tail, 1.90.

Hab.—Pacific coast, from Puget Sound to California.

I never saw anything like a chimney swallow in any part of the country, and think that the Columbia must be the limit of migration to *Vauxii*. I think, however, I should have noticed it at Vancouver, if found there, in June and July, 1853. Dr. Kennerly has, however, since sent one from the Straits of Fuca, showing that it sometimes extends its migrations up to the 49th parallel.—C.

This bird was obtained by Dr. Townsend at Fort Vancouver, on the Columbia river, the point where Dr. Townsend obtained the greater part of his collection. I have never been able to procure a specimen of this bird, and therefore presume that it is of very rare occurrence.—S.

Family CAPRIMULGIDAE. The Goat-suckers.

ANTROSTOMUS NUTTALLI, Cassin.

Nuttall's Whippoorwill.

Caprimulgus nuttalli, Aud. Birds America, VII, 1843; pl. 495 appendix.

Antrostomus nuttalli, Cassin, J. A. N. Sc. Phila. 2d series, II, 1852, 123.—Ib. Ill. I. 1855, 237.—Newberry, Zool. Cal. and Oregon Route, 77; Rep. P. R. R. Surv. VI, iv.—Baird, Gen. Rep. Birds, p. 419.

Sp. Ch.—Bristles without lateral filaments; wing about 5½ inches; top of the head hoary gray, with narrow transverse, not longitudinal bands. Tail nearly black on the terminal half, the extreme tip only (in the three outer feathers of each side) being white for nearly an inch. Length, 8; wing, 5.50; extent, 17.50; iris, brown; bill and feet, gray.

Hab.—High central plains to the Pacific coast.

Nuttall's whippoorwill I have found only in the open country east of the Cascade mountains, where, in the summer of 1853, it was common near the Yakima river. The two specimens I obtained were killed with a whip in the daytime, being probably dazzled by the sunshine when started from the ground. Late in the evening I saw them flying near the ground and making a singular hollow sound as they sat on it, where I could not distinguish them in the twilight. I shot one in California as late as November 6. It would start close to my feet, fly short distances very irregularly, and alight on the ground. It was silent at that season.—C.

This bird, well known as an inhabitant of the far west, is moderately abundant in the great arid interior of Washington and Oregon Territories. Along the *coast* I have never seen or heard one of the species, but east of the Cascade mountains, at Fort Dalles, on almost any fine night in spring and early in summer they can be heard uttering their cries. These closely resemble that of the Atlantic species, (*A. vociferus*,) but are proportionately more feeble, and are not so incessantly kept up.—S.

CHORDEILES POPETUE, Baird.

Night Hawk; Bull Bat.

Caprimulgus popetue, Vielliot, Ois. Am. Sept. I, 1807, 56; pl. xxiv. (♀).—Bonap. Obs. Wilson, 1825, 177, from J. A. N. Sc. Phila. VI.

Caprimulgus americanus, Wilson, V, 1812, 65; pl. cxl. f. 1, 2.

Chordeiles americanus, De Kay, N. Y. Zool. II, 1844, 34; pl. xxvii.

Caprimulgus virginianus, Brisson, II, 1760, 477. (In part only.)—Bonap. Synopsis, 62.—Aud. Orn. Biog. II, 1834, 273; pl. 147.

Caprimulgus (*Chordeiles*) *virginianus*, Sw. F. Bor. Am. II, 1831, 62.

Chordeiles virginianus, Bon. List. 1838.—Aud. Birds Am. I, 1840, 159; pl. 43.—Cassin, Ill. I, 1855, 238.—Newberry, Zool. Cal. and Oregon Route, 79; Rep. P. R. R. Surv. VI, 1857.

Chordeiles popetue, Baird, Gen. Rep. Birds, p. 151.

Sp. Ch.—Male, above greenish black, with but little mottling on the head and back. Wing coverts varied with grayish; scapulars with yellowish rufous. A nuchal band of fine gray mottling, behind which is another coarser one of rufous spots. A white V-shaped mark on the throat; behind this a collar of pale rufous blotches, and another on the breast of grayish mottling. Under parts banded transversely with dull yellowish or reddish white and brown. Wing quills quite uniformly brown. The five outer primaries with a white blotch midway between the tip and carpal joint, not extending on the outer web of the outer quill. Tail with a terminal white patch.

Female, without the caudal white patch, the white of the throat mixed with reddish. Length of male, 9.50; wing, 8.20.

Hab.—North America generally.

The nighthawk is very abundant in the interior of the Territory, arriving at Puget Sound about June 1, and remaining until September. At Vancouver, in June, the monotonous cry of this bird was audible day and night, as it flew high above the tall spruces. In the evening they would fly low, and light near houses on the ground.—C.

Abundant at Fort Dalles and on the prairies near Puget Sound. At Fort Steilacoom I first noticed the arrival of this bird from the south, in 1854, on the 1st of June, and in 1856, on the 3d of June, soon after which it became, in both seasons, quite plentiful. In habit, voice, &c., I noticed no difference from the same bird on the Atlantic.—S.

Family ALCEDINIDAE.—Kingfishers.

CERYLE ALCYON, Boie.

Belted Kingfisher.

Alcedo alcyon, Linnaeus, Syst. Nat. I, 1766, 180.—Wilson, Am. Orn. III, 1811, 59.—Audubon, Orn. Biog. I, 1831, 394; pl. 77.—Ib. Birds America.

Ceryle alcyon, Boie, Isis, 1828, 316.—Cassin, Illust. I, 1855, 254.—Brewer, N. Am. Oology, I, 1857, 110; pl. iv, fig. 52. (Egg.)—Baird, Gen. Rep. Birds, p. 158.

Ispida ludoviciana, Gmelin, Syst. Nat. I, 1788, 452.

Sp. Ch.—Head with a long crest. Above blue, without metallic lustre. Beneath, with a concealed band across the occiput; and a spot anterior to the eye, pure white. A band across the breast, and the sides of the body under the wing, like the back. Primaries white on the basal half, the terminal unspotted. Tail with transverse bands and spots of white.

Young, with the sides of body and a transverse band across the belly below the pectoral one, light chestnut; the pectoral band more or less tinged with the same. Length of adult about $12\frac{3}{4}$ inches; wing, 6 or more.

Hab.—The entire continent of North America.

The common kingfisher is abundant throughout the year along every stream, as well as the coast, where it burrows out holes in cliffs surrounding the bays and inlets. It probably does not retire southward, except in those uncommon winters when all the fresh water becomes frozen.—C.

Very abundant throughout Washington and Oregon Territories. The habits of this bird on the Pacific coast differ in no respect from those of individuals found in the older States. It is very generally distributed throughout Washington Territory.—S.

Family COLOPTERIDAE.—The Flycatchers.

TYRANNUS CAROLINENSIS, Baird.

King Bird; Bee Martin.

Lanius tyrannus, Linn. Syst. Nat. I, 1766, 136. This belongs to the Cuban *T. matutinus*, according to Bonaparte.

Muscicapa tyrannus, (Brisson?) Wilson, Am. Orn. I, 1808, 66; pl. xiii.—Aud. Orn. Biog. I, 1832, 403: V, 1839, 420; pl. 79.—Ib. Birds Amer. I, 1840, 204; pl. 56.

Lanius tyrannus, var. γ *carolinensis ludovicianus*, GMELIN, Syst. Nat. I, 1788, 302.
Muscicapa rex, BARTON, Fragments, N. H. Penna. 1799, 18.
Tyrannus pipiri, VIELLIOT, Ois. Am. Sept. I, 1807, 73; pl. xliv.—CAB. Journ. Orn. III, 1855, 478.
Tyrannus intrepidus, VIELLIOT, Galerte Ois. I, 1824, 214; pl. 133.—SWAINSON, Mon. Ty. Shrikes Quart. Jour. 1826, 274.
Tyrannus carolinensis, BAIRD, Gen. Rep. Birds, p. 171.

SP. CH.—Two, sometimes three, outer primaries abruptly attenuated at the end. Second quill longest; third little shorter; first rather longer than fourth, or nearly equal. Tail slightly rounded. Above dark bluish ash. The top and sides of the head to beneath the eyes bluish black. A concealed crest on the crown, vermilion in the centre, white behind, and before partially mixed with orange. Lower parts pure white, tinged with pale bluish ash on the sides of the throat and across the breast; sides of the breast and under the wings similar to, but rather lighter than, the back. Axillaries pale grayish brown, tipped with lighter. The wings dark brown, darkest towards the ends of the quills; the greater coverts and quills edged with white, most so on the tertials; the lesser coverts edged with paler. Upper tail coverts and upper surface of the tail glossy black, the latter very dark brown beneath; all the feathers tipped, and the exterior margined externally with white, forming a conspicuous terminal band about .25 of an inch broad. Length, 8.75; extent, 15 inches; wing, 4.65 inches; tail, 3.70; tarsus, .75. Iris brown; bill, &c., black.

Hab.—Eastern North America to Rocky mountains. West of this found only in Washington Territory.

The common king bird of the Atlantic States is abundant during summer, arriving with the preceding and having the usual habits of the species.—C.

The tyrant fly-catcher or king bird I found quite plentiful as far west as the eastern base of the Rocky mountains. Again I found it, more sparingly, however, at Puget Sound, where I obtained several skins. The habits of this bird in Oregon do not differ from those recorded of the same bird east of the mountains. They appear to shun the dense forests near Puget Sound, but are found moderately plentiful in the groves of low oaks, and among the cotton-wood tress fringing the prairie lakes of the Nisqually plains, where, on the 5th of August, 1853, I obtained a nest containing young nearly fledged.—S.

TYRANNUS VERTICALIS, Say.

Arkansas Flycatcher.

Tyrannus verticalis, SAY. Long's Exped. II, 1823, 60.—NUTTALL, Man. II, 2d ed. 1840, 306.—BAIRD, Gen. Rep., Birds, p. 173.
Muscicapa verticalis, BONAP. Am. Orn. I, 1825, 18; pl. xi.—AUD. Orn. Biog. IV, 1838, 422; pl. 359.—IB. Birds Amer. I, 1840, 199; pl. 54.

SP. CH.—The four exterior quills attenuated very gently at the end, the first most so; third and fourth quills longest, second and fifth successively a little shorter. Tail slightly forked; bill shorter than the head. Crown, sides of head above the eyes, nape, and sides of neck pale lead color or ash gray; a concealed crest in the crown, vermilion in the centre, and yellowish before and behind. Hind neck and back ash gray, strongly tinged with light olivaceous green, the gray turning to brown on the rump; upper tail coverts nearly black, lower dusky; chin and part of ear coverts dull white; throat and upper part of breast similar to the head, but lighter, and but slightly contrasted with the chin; rest of lower parts, with the under wing coverts and axillars, yellow, deepening to gamboge on the belly, tinged with olivaceous on the breast. Wing brown, the coverts with indistinct ashy margins; secondaries and tertials edged with whitish; inner webs of primaries whitish towards the base. Tail nearly black above and glossy, duller brownish beneath; without olivaceous edgings. Exterior feather, with the outer web and the shaft, yellowish white; inner edge of latter brown. Tips of remaining feathers paler. Bill and feet dark brown.

Female rather smaller, and colors less bright. Length of male, 12 inches; extent, 19 inches; wing, about 4.50; length of female, 9 inches; extent, 15.50; iris brown; bill and feet black.

Hab.—Western North America, from the high central plains to the Pacific.

This *western king bird* arrives at Puget Sound in June, together with the common species, with which they associate for some time after without any hostility, though their similar habits and food would apparently lead to dispute. I have even seen them together in parties of four

in June, about the period of mating. They pursue insects in the same manner as the other species, and often descend to the ground for grasshoppers, &c. Their cries are harsh and loud, not deserving the name of a song. They never approach the coast, though so common in almost every other part of the country west of the Mississippi.—C.

This bird is abundant during the summer, both in the central and western sections of Oregon Territory and Washington Territory. In 1856 I first noticed their arrival from the south about May 15. At Fort Dalles, in 1855, I obtained them, I think, a little earlier. They then appeared simultaneously with the Icterus Bullockii. At Fort Steilacoom their arrival in 1856 was at about the same time as that of the Pyranga Ludoviciana, Columbia fasciata, Denaidura, Carolinensis, and others.

The first notification of the arrival of this species in the spring is the occurrence of the quarrels and skirmishes incident to their courtships. Like the other birds of this family, they are remarkably quarrelsome and pugnacious, so much so that, during the commencement of the breeding season, whenever they were moderately plentiful, I could scarcely cast my eyes in any direction without witnessing jealous conflicts in which two or more of these little creatures, with harsh, squeaking clamor, were most madly engaged. The battles were generally fought in the air, and presented ludicrous alternations of pursuit and flight.

The breeding places at Fort Dalles were in oak trees by preference.—S.

CONTOPUS BOREALIS, Baird.

Olive-sided Flycatcher.

Tyrannus borealis, Sw. & Rich. F. Bor. Am. II, 1831, 141; plate.

Muscicapa cooperi, Nuttall, Man. I, 1832, 282 —Aud. Orn. Biog. II, 1834, 422: V, 1839, 422; pl. 174.—Ib. Synopsis, 1839, 41.—Ib. Birds Amer. I, 1840, 212; pl. 58.

Tyrannus cooperi, Bonap. List, 1838.—Nuttall, Man. I, 2d ed. 1840, 298.

Contopus cooperi, Cabanis, Journal für Ornithol. III, Nov. 1855, 479.

Muscicapa inornata, Nuttall, Man. I, 1832, 282.

Contopus borealis, Baird, Gen. Rep. Birds, p. 188.

Sp. Ch.—Wings long, much pointed; the second quill longest; the first longer than the third. Tail deeply forked. Tarsi short. The upper parts ashy brown, showing darker brown centres of the feathers; this is eminently the case on the top of the head; the sides of the head and neck, of the breast and body resembling the back, but with the edges of the feathers tinged with gray, leaving a darker central streak. The chin, throat, narrow line down the middle of the breast and body, abdomen, and lower tail coverts white, or sometimes with a faint tinge of yellow. The lower tail coverts somewhat streaked with brown in the centre. On each side of the rump, generally concealed by the wings, is an elongated bunch of white silky feathers. The wings and tail very dark brown, the former, with the edges of the secondaries and tertials, edged with dull white. The lower wing coverts and axillaries grayish brown. The tips of the primaries and tail feathers rather paler. Feet and upper mandible black, lower mandible brown. The young of the year similar, but the color duller; the feet light brown. Length, 8.50 to 7.75; extent, 10.50 to 13; wing, 4.33; tail, 3.30; tarsus, .60. Iris brown; feet black; bill black above, horn color below. Female smaller.

Hab.—Rare on the Atlantic and Pacific coasts of the United States. Not observed in the interior, except to the north. Found in Greenland. (Reinhardt.)

The olive-sided flycatcher is very common, arriving early in May, and frequenting the borders of woods, where, from the summit of some tall dead tree, its loud melancholy cry resounds through the day during the whole of summer. It frequents the small pine groves along the coast as well as the interior, and remains until late in September.—C.

I obtained a specimen of a bird at Fort Steilacoom, July 10, 1856, which agreed in many respects with Nuttall's description of this species. From my note book I extract the following remarks: "No. 454. ♂. $6\frac{1}{2}$, $10\frac{1}{2}$. Upper mandible nearly *black;* lower dusky (purplish?

Nuttall,) *horn color*, darker at the tip. Lining membrane of the mouth, *yellow orange;* feet and legs, *black;* iris, hazel. Tail extends about $1\frac{1}{4}$ inches beyond the folded wings." This skin was unfortunately lost in my missing collection of July and August, 1856.

This bird is not abundant on Puget Sound, and it is but seldom that a specimen can be obtained. But this is partly owing to the preference it has for shady thickets and dense foliage, where it is with difficulty shot.—S.

EMPIDONAX PUSILLUS, Cabanis.

Tyrannula pusilla, Sw. F. B. Am. II, 1831, 144; pl.—Rich. App. Back's Voyage, 1834–'36, 144.—Gambel, Pr. A. N. Sc. III, 1847, 156.

Muscicapa pusilla, Aud. Orn. Biog. V, 1839, 288; pl. 434.—Ib. Birds Amer. I, 1840, 236; pl. 66.

Tyrannus pusilla, Nuttall, Man. I, 2d ed. 1840.

? "*Empidonax pusillus*, Cab." Baird, Gen. Rep. Birds, p. 194.

Sp. Ch.—Second, third, and fourth quills longest; first shorter than the sixth. Tail even. Tarsi rather long. Above dirty olive brown, paler and more tinged with brown towards the tail. Throat and breast white, tinged with grayish olive on the sides, shading across the breast; belly and under tail coverts very pale sulphur yellow. Wings with two dirty narrow brownish white bands slightly tinged with olive; the secondaries and tertials narrowly and inconspicuously margined with the same. First primary faintly edged with whitish; the outer web of first tail feather paler than the inner, but not white. Under wing coverts reddish ochraceous yellow. A whitish ring round the eye. Length, 5.50 inches; extent, 8.50; wing, 2.80; tail, 2.75. Iris, brown; bill and feet, black; lower mandible, pale flesh color.

Hab.—High central plains to the Pacific. Fur countries. Southward into Mexico.

The little pewee of Nuttall is one of the few birds that frequent the dark and gloomy spruce forests, which it seems to prefer to more open places. It is most abundant near the coast, but I have seen a few at Puget Sound, where they arrived about the 25th of April. It is difficult to get a sight of this small musician as it flits through the upper branches of the tall spruces, uttering constantly its monotonous but lively ditty. Its colors make it almost invisible in the shade.

It is also a common species about Puget Sound in summer. I could not discover its nest. I observed that one of them kept constantly on the border of a small pond, and drove the kingbird away from the place. It has a peculiar short and lisping song of three notes in summer, very different from other species. In fall the young birds make a very different loud call as they wander about the woods.

I did not find the nest of this bird. By the first of September they have all retired southward.

Note.—The difference in color of lower mandible observed in this and some other western birds may be of value as a specific distinction in connexion with other points stated by Prof. Baird.—C.

Quite abundant in the vicinity of Fort Steilacoom, where it arrives early in May. It seems to prefer the vicinity of bushes and low trees at the *edges* of dense forests. In 1856 I obtained at Fort Steilacoom the following: No. 396. May 19. $6\frac{1}{8}$, 9.—No. 421. June 3. 6, $8\frac{3}{4}$.—No. 443. June 18. $6\frac{1}{4}$, $8\frac{3}{4}$.

I found this bird rather less pugnacious than others of the group, and in habits generally more resembling the Vireo family. Its notes are short but sweet, and just after sundown on warm summer evenings particularly low, plaintive, and soothing.—S.

Family TURDIDAE.

Sub-Family TURDINAE.—The Thrushes.

TURDUS USTULATUS, Nuttall.

Turdus ustulatus, NUTTALL, Man. Orn. I, (2d ed.) 1840, 400. Columbia river; (printed *cestulatus* by a typograhical error.)—BAIRD, Gen. Rep. Birds, p. 215.

SP. CH.—Third and fourth quills longest; second intermediate between fourth and fifth. Tail nearly even. Upper parts uniform reddish brown, with a faint olivaceous tinge. Fore part of the breast tinged with brownish yellow, becoming paler to the chin; the remaining under parts are white. The sides of the throat and the fore part of the breast, with small distinct triangular spots of well defined brown, much darker than the back; the sides of the breast more obsoletely spotted, and the sides of the body washed with olivaceous yellow brown. The tibiae are yellowish brown. Nearly the whole of the lower mandible, except the rami, is brown. Length, 7.25 to 8; extent, 11.75 to 12.25; wing, 3.75; tail, 3.00; tarsus, 1.12. Iris, brown; legs, light brown; bill, brown; lower mandible, yellow at base.

Hab.—Coast region of Oregon and Washington Territories.

The "western thrush" of Nuttall is one of the most common summer residents in the wooded part of the Territory, arriving in May and remaining until the beginning of September. It closely resembles Wilson's in appearance and habits, but quite distinct. Its song is similar, but shorter, and without the metallic ringing sound of that bird. It frequents the borders of woods and bushes along streams, and, except just after its arrival, is not very shy. About the middle of June I found its nests containing eggs built commonly on a small horizontal branch, and very strongly constructed of twiggs, grass roots, and leaves, sometimes covered outside entirely with moss, which, in the damp climate near the coast, grows, and forms large masses. It appears to raise two broods, as I have found a nest with eggs in it as late as July 13. The eggs, unlike those of most thrushes, are white, spotted thickly with brown, and four or five in number. This thrush sings most in the early morning and evening, when numbers may be heard answering each other from all sides. They do not seek the darkness of thickets so much as the hermit thrush, but often feed in gardens, &c., in the sunshine.—C.

This bird is quite abundant west of the Cascade mountains. In the neighborhood of Fort Steilacoom, at the edges of the large forests and in the vicinity of swamps and damp lands, this bird is found abundantly in spring and summer. It has a great faculty for hiding itself securely, and, although very numerous, is difficult to obtain. Its voice is a low, soft, sad, lonely, whistle, generally confined to one note about three seconds in length, and repeated at very regular intervals. One specimen, (No. 517,) shot August 2, 1856, at Fort Steilacoom, measured 7.62, 11. Another, a young bird, killed July 26, I find in my note book, had "the membrane at angle of mouth *lemon yellow*."—S.

NOTE.—I have twice only seen a thrush resembling the hermit thrush in general appearance, but quite differently colored. The first was brought to me December 4, with its tail pulled out, having been caught in a house. It was of a very dark brown, *without* a tint of olive, and its breast more thickly marked with spots of the *same* color, large and round. I afterwards saw another, on Whitby's island, in March, but could not get a shot at it. I suppose, therefore, it is a winter visitor only in the lower country. This seems to resemble *T. solitarius* of Wilson, (the brown thrush of Pennant and Latham?) and *T. minor* of Swainson, which was probably obtained far to the north.—C.

TURDUS MIGRATORIUS, Linn.

Robin.

Turdus migratorius, Linnæus, Syst. Nat. I, 1766, 292.—Forster, Philos. Trans. LXII, 1772, 382.—Vielliot, Ois. Am. Sept. II, 1807, 5; pl. lx, lxi.—Wilson, Am. Orn. I, 1808, 35; pl. ii.—Doughty, Cab. Nat. Hist. I, 1830, 133; pl. xii.—Brehm, Handbuch Vög. Deutsch. 1831, 388, (European spec.)—Audubon, Orn. Biog. II, 1834, 190; pl. 131.—Ib. Birds Amer. III, 1841, 14; pl. 142.—Bonaparte, Conspectus, 1850, 272.—Newberry, Zool. Cal. and Or. Route, 81; Rep. P. R. R. Surv. VI, 1857.—Baird, Gen. Rep. Birds, p. 218.

Merula migratoria, Sw. & Rich, Fauna Bor. Amer. II, 1831, 176.

Planesticus migratorius, Bonaparte. (?)

Sp. Ch.—Third and fourth quills about equal; fifth a little shorter; second longer than sixth. Tail slightly rounded. Above olive gray; top and sides of the head black. Chin and throat white, streaked with black. Eyelids, and a spot above the eye anteriorly, white. Under parts and inside of the wings, chestnut brown. The under tail covets and anal region, with tibae, white, showing the blumbeous inner portions of the feathers. Wings dark brown, the feathers all edged more or less with pale ash. Tail still darker, the extreme feathers tipped with white. Length, 9.75; extent, 16; wing, 5.43; tail, 4.75; tarsus, 1.25. Bill, yellow, dusky along the ridge and at the tip; legs, black; iris, brown.

Hab.—Continent of North America to Mexico.

The robin is as abundant and familiar in all parts of this Territory as in the eastern States. It is also a constant resident and builds its nest in May. I noticed fledged young as early as June 10, at Puget Sound.—C.

This bird is very abundant in both Oregon and Washington Territories. I have secured many specimens for the sake of accurate comparison with eastern birds of the same species.—S.

TURDUS NAEVIUS, Gmelin.

Varied Thrush, or Painted Robin.

Turdus naevius, Gmelin, Syst. Nat. I, 1788, 817.—Vielliot, Ois. Am. Sept. 11, 1807, 10; pl. lxvi.—Audubon, Orn. Biog. IV, 1838, 489: V, 1839, 284; pl. 369 and 433.—Ib. Birds Amer. III, 1841, 22; pl. 143.—Bonap. Conspectus, 1850, 271.—Cabot, Jour. Bost. Soc. N. H. III, 1848, 17. (Spec. shot near Boston.)—Lawrence, Annals N. Y. Lyc. V, June, 1852, 221. (Spec. shot near New York.)—Newberry, Zool. Cal. and Or. Route, 81; Rep. P. R. R. Surv. VI, iv, 1857.—Baird, Gen. Rep. Birds, p. 219.

Orpheus naevius, Rich, List, 1837.

Ixoreus naevius, Bonap. Notes Orn. Delattre, in Comptes Rendus, XXVIII, 1854, 269.

Orpheus meruloides, Rich. Fauna Bor. Amer. II, 1831, 187; pl. xxxviii.

Sp. Ch.—Fourth quill longest; third and fifth a little shorter; second much longer than sixth. Tail nearly even; the lateral feather shorter. Above, rather dark bluish slate; under parts generally, a patch on the upper eyelids continuous with a stripe behind it along the side of the head and neck, the lower eyelids, two bands across the wing coverts and the edges of the quills, in part, rufous orange brown; middle of belly white. Sides of the head and neck, continuous with a broad pectoral transverse band, black. Most of tail feathers with a terminal patch of brownish white. Female more olivaceaus above; the white of the abdomen more extended; the brown beneath paler; the pectoral band obsolete. Length, 9 to 10; extent, 12¾ to 15¼ inches; wing, 5.00; tail, 3.90; tarsus, 1.25. Iris, brown; bill, black; feet, yellow.

Hab.—Pacific coast, North America. Accidental on Long Island and near Boston.

The varied thrush or western robin is common during winter, and I think a few remain near the coast all summer, as I have seen them in the dark spruce forests in June and July. They are much more shy and retiring than the robin, and differ very much in song, which, as I have heard it, consists only of five or six notes in a minor key, and in a scale regularly

descending. It is commonly heard in the tops of the trees, and in summer only in the densest of forests. In winter they associate with the robins, and feed much on the ground, sometimes coming around houses in cold weather.—C.

Obtained at Port Townsend, Puget Sound, and at Bellingham bay. Common at Astoria, O. T. Does not seem to extend very far inland, as it was not seen by me at Fort Steilacoom. In winter it is a shy bird, not generally becoming noticeable in the open districts until after a fall of snow, when many individuals may be seen along the sand beaches near salt water. They are at such times tame and abundant, at least sufficiently so for any ordinary shot to obtain a dozen specimens in a forenoon. I suppose that they are driven out of the woods, during the heavy snows, by hunger. It may then frequently be found in company with the common robin, with which it has many similar habits. It was during the continuance of a rather heavy fall of snow that I obtained the three specimens preserved. In my note book I find the following remark: "At this time of the year it is a very silent bird, quite tame, allowing near approach; flying up when the intruder comes too near, but alighting on the ground again at a short distance in front. It appears to be fond of flying by short stages in a desultory manner, sometimes alighting on the ground; at others on fences, bushes, or trees. The settlers here (at Port Townsend) call them spotted, painted, and golden robins." The most conspicuous mark on the bird which strikes the eye at first is the black crescent on the fore part of the breast.—S.

Sub-Family SAXICOLINAE.—Rock Thrushes.

SIALIA MEXICANA, Swainson.

Western Blue Bird.

Sialia mexicana, Sw. F. Bor. Am. II, 1831, 202.—Baird, Gen. Rep. Birds, p. 223

Sialia occidentalis, Townsend, Jour. Ac Nat. Sc. VII, II, 1837, 188.—Ib. Narrative, 1839, 343.—Aud. Synopsis, 1839.—Ib. Birds America, II, 1841, 176; pl. 135.—Nuttall, Man. I, (2d ed.,) 1840, 513.—Newberry, Zool. Cal. & Or. Route, 80; Rep. P. R. R., VI, IV, 1857.

Sylvia occidentalis, Audubon, Orn. Biog. V, 1839, 41; pl. 393.

Sialia caeruleo-collis, Vigors, Zool. Beechey's Voyage, 1839, 18; pl. iii.

Sp. Ch.—Bill slender; head and neck all round, and upper parts generally, bright azure blue. Interscapular regions, sides, and fore part of the breast, and sides of the belly, dark reddish brown. Rest of under parts (with tail coverts) pale bluish, tinged with gray about the anal region. Female duller above; the back brownish; the blue of the throat replaced by ashy brown, with a shade of blue. Length, 6.50 to 7 inches; extent, 12½ to 13; wing, 4.25; tail, 2.90. Iris, brown; bill and feet, black.

Hab.—Pacific coast, North America, and along valley of Gila to upper Rio Grande and south.

The western blue-bird, though very similar to the common eastern species, has not that familiar confidence which makes the latter such a favorite. It seems to prefer the knot holes of the oaks to any box or similar shelter provided for it, but may, when trees are scarcer, become more dependent on man. It also differs in its song, which is not so loud as sweet, and is curiously performed to sound as if two birds were singing at once and in different keys. Its call note is also shorter than that of the eastern bird.

Most of this species probably remain during the winter in the Territory, as I have seen them in December and early in March. They then associate in flocks, which frequent roadsides and fences, feeding on insects or berries. They have the same mode of hovering over a field, to watch for grasshoppers, &c., that we see in the eastern species.—C.

This bird is exceedingly common in Oregon and Washington Territory. At Fort Steilacoom

and at Fort Dalles, as early as February, occasional stragglers are seen. In March and April the main body of individuals arrive from their winter retreats, and during the breeding season and summer are found abundantly at both places.

The notes of this at times resemble those of the eastern species. A young individual that I obtained at Fort Steilacoom during the summer of 1856 showed the immature maculated coloration of the plumage very finely. The feathers of the breast were dusky ferruginous, having each a paler streak along the middle.

Excepting one or two stragglers I saw none of this species during the winter months, but, like their eastern representatives, they are among the earliest harbingers of spring. In the autumn of 1854 I noticed, at Fort Dalles, a flock of these birds which had apparently assembled with the view of migrating southward. They shortly afterwards all disappeared, and I saw no others till about the 1st of the following March.—S.

Sub-Family REGULINAE.—The Crowned Wrens.

REGULUS CALENDULA, Licht.

Ruby-crowned Wren.

Motacilla calendula, Lann. Syst. Nat. I, 1766, 337.—Forster, Phil. Trans. LXII, 1772, 383.—Gmelin, Syst. Nat. I, 1788, 994.

Sylvia calendula, Latham, Ind. Orn. II, 1790, 549.—Wilson, Am. Orn. I, 1808, 83; pl. v, f. 3.—Doughty, Cab. N. H. II, 1832, 61; pl. vi.

Regulus calendula, Licht. Verzeich. 1823, Nos. 408–'9.—Nuttall, Man. I, 1832, 415.—Audubon, Orn. Biog. II, 1834, 546; pl. 195.—Ib. Birds Amer. II, 1841, 168; pl. 133.—Baird, Gen. Rep. Birds, 226.

Reguloides calendula, Bonap. Conspectus, 1850, 292.

Sp. Ch.—Above dark greenish olive, passing into bright olive green on the rump and outer edges of the wings and tail. Crown with a large concealed patch of scarlet feathers, which are white at the base. The under parts are grayish white, tinged with pale olive yellow, especially behind. A ring round the eye, two bands on the wing coverts, and the exterior of the inner tertials white. Young without the red on the crown. Length, 4 to 4.38; extent, 6 to 7.25; wing, 2.33; tail, 1.85. Iris, bill, and feet, brown; toes, yellow.

Hab.—United States from Atlantic to Pacific.

The ruby-crowned wren associates with the golden-crowned in winter along the coast, and has their similar habits. I have not seen it during summer.—C.

This bird does not appear to be a constant winter resident of Washington Territory. The first specimen I obtained was on April 8, 1856, when it seemed to have just arrived from the south. A short time afterwards it became quite plentiful, and continued so until about May 20, when the species appeared to have either retired to the depths of the forests, or else to have gone further north. After that time only a few stragglers were seen.—S.

REGULUS SATRAPA, Licht.

Golden-crested Wren.

Regulus satrapa, Lichtenstein, Verzeich. Doubl. 1823, No. 410. (Quotes *Parus satrapa*, Illiger, probably a museum name.)—Bonap. List, 1838.—Ib. Conspectus, 1850, 291.—Aud. Synopsis, 1839, 82.—Ib. Birds Amer. II, 1841, 165; pl. 132.—Baird, Gen. Rep. Birds, 227.

Sylvia regulus.—Wilson, Am. Orn. I, 1808, 126; pl. viii, f. 2. (Not of Latham.)

Regulus cristatus, Vieillot, Ois. Am. Sept. II, 1807, 50; pl. cvi. (Not of Ray.) Bonap. Obs Wilson, 1825.—Ib. Synopsis, 1828, 91.

Regulus tricolor, Nuttall, Man. I, 1832, 420.—Aud. Orn. Biog. II, 1834, 476; pl. 183.

Sp. Ch.—Above olive green, brightest on the outer edges of the wing; tail feathers tinged with brownish gray towards the head. Forehead, a line over the eye and a space beneath it, white. Exterior of the crown before and laterally black,

embracing a central patch of orange red, encircled by gamboge yellow. A dusky space around the eye. Wing coverts with two yellowish white bands, the posterior covering a similar band on the quills, succeeded by a broad dusky one. Under parts dull whitish. Length, under 4 inches to 4. 25; extent, 6. 25; wing, 2. 25; tail, 1.80.

Hab.—Northern parts of United States from Atlantic to Pacific; on west coast only noticed on Puget Sound.

The golden-crowned wren is an abundant bird in the forests, especially during winter, and some remain all summer, as I have seen them feeding their young in August at Puget Sound. I have not met with its nest, nor have I heard its song. Its usual note was merely a chirp.—C.

The golden-crested wren is an abundant bird during the winter in the dense forests in the vicinity of Puget Sound. On almost any fine day at that season small groups of these active little creatures can be found industriously seeking their subsistence in the tops of the tall deciduous forest trees of the river bottoms. I have occasionally also seen them in the evergreens.

Some stay during the summer and breed, while the greater number probaby repair to the more northern portions of the continent, or else to the dense wilderness of the Cascade mountains.—S.

Sub-Family CINCLINAE.—The Ouzels.

HYDROBATA MEXICANA, Baird.

American Dipper; Water Ouzel.

Cinclus pallasii, Bonap. Zool. Jour. II, Jan. 1827, 52.—Ib. Amer. Orn. II, 1828, 173; pl. xvi, f. 1; (not the Asiatic *pallasii*.)

Cinclus mexicanus, Swainson, Syn. Mex. Birds, in Phil. Mag. I, May, 1827, 368.

Cinclus americanus, Sw. & Rich. F. Bor. Am. II, 1831, 173.—Nuttall, Man. II, 1834, 569.—Aud. Orn. Biog. IV, 1838, 493: V, 1839, 303; pl. 370, 435.—Ib. Synopsis, 1839, 86.—Ib. Birds Amer. II, 1841, 182; pl. 137.—Newberry, Zool. Cal. & Or. Route, 80; Rep. P. R. R. Surv. VI, iv, 1857.

Cinclus unicolor, Bonap. List, 1838.

Cinclus mortoni, Townsend, Narrative, 1839, 337.

Cinclus townsendii, "Audubon," Townsend, Narr. 1839, 340.

Hydrobata mexicana, Baird, Gen. Rep. Birds, p. 229.

Sp. Ch.—Above dark plumbeous, beneath paler; head and neck all round a shade of clove or perhaps a light sooty brown; less conspicuous beneath. A concealed spot of white above the anterior corner of the eye and indications of the same sometimes on the lower eyelid. Immature specimens usually with the feathers beneath edged with grayish white; the greater wing coverts and lesser quills tipped with the same. The colors more uniform. Length, 7. 50; wing, 3. 00; tail, 2. 55.

Hab.—Rocky mountains from British America to Mexico.

I first noticed the water ouzel on the upper branches of the Columbia near the boundary line. I have also seen them a few times on streams near its mouth, and at Olympia, Puget Sound. On the 5th July I found a nest of this bird at a saw mill down on the Chehalis river. It was built under the shelving roots of an immense arbor-vitæ, which had floated over and rested in a slanting position against the dam. The floor was made of small twigs and bare, the sides and roof arching over it like an oven, and formed of moss projecting above so as to shelter the opening. This was large enough to admit the hand, and the inside very capacious. It contained half-fledged young. The old birds were familiar and fearless, being accustomed to the noise of the mill and the society of the men, who were much interested by their curious habits. They had already raised a brood in the same nest that summer.—C.

I obtained several specimens of this bird in the Rocky mountains, upon the streams of which it is very abundant. In habits it agrees remarkably with those described by Prince C. Lucien Bonaparte as belonging to the European species. It uses its wings like the *divers* while under

water, and appears to be equally at home either on the surface or under. One curious fact I noticed in regard to this bird is, that I frequently saw them *singly* or in *couples*, but never more *than two together*. In fact, they seem to prefer solitude, and eschew all sociable communion, or the slightest attempt at gregarious life, except the indispensable union of a pair for the purpose of procreation.

I never saw this bird on or near still water. They prefer and delight in wild mountain streams, where, among cascades, eddies, and swift currents, they lead their curious lives.

George Gibbs, esq., in a letter to me, mentions seeing this bird at Bellingham bay, and also says: "The bird described by Nuttall as the American water ouzel was common on the Salmon river, which is a rapid, brawling stream. As I sat at my cradle on the bank, a pair of them, which I suppose had their nests hard by, or perhaps, as it was July or August, had already hatched their brood, used to play in the water near me, sometimes alighting at the head of a rapid, allowing themselves to be swept under, and then rising below. They dive with great celerity, and at times beat the water with their wings, throwing the spray over themselves. Their whistle was sweet and rather sad, but they seemed very happy and busy fellows notwithstanding, and in no wise afraid of the harsh rattle of the miner's cradle."

It is not uncommon on the small streams about Puget Sound, but still not so numerous as in the Rocky mountains.—S.

Family SYLVICOLIDAE.—The Warblers.

Sub-Family MOTACILLINAE.—The Wagtails.

ANTHUS LUDOVICIANUS, Licht.

American Tit Lark.

Alauda ludoviciana, Gmelin, Syst. Nat. I, 1788, 793.

Anthus ludovicianus, Licht. Verz. 1823, 37, no. 421.—Rich. List, 1837.—Bonap. List, 1838.—Ib. Conspectus, 1850, 249.—Audubon, Synopsis, 1839, 94.—Ib. Birds Amer. III, 1841, 40; pl. 150.

Alauda rufa, Wilson, Am. Orn. V, 1812, 89; pl. lxxxix.

Anthus spinoletta, Bonap. Synopsis, 1828, 90, (not of Linnaeus.)—Aud. Orn. Biog. I, 1832, 408: V, 1839, 449; pl. 80.—Nuttall, Man. I, 1832, 450.

Anthus aquaticus, Aud. Name on Pl. x, folioed.

Anthus pipieus, Aud. Orn. Biog. I, 1832, 408: V, 1839, 449; pl. 80. (Young?)

"*Anthus ludovicianus*, Licht." Baird, Gen. Rep. Birds, p. 232.

Sp. Ch.—(*Female*, in spring.) Above olive brown, each feather slightly darker towards the central portion; beneath pale dull buff, or yellowish brown, with a maxillary series of dark brown spots and streaks across the breast and along sides. Ring round the eye, and superciliary stripe yellowish. Central tail feathers like the back, others dark blackish brown; the external one white, except at the base within; a white spot at the end of the second. Primaries edged with whitish, other quills with pale brownish. Length, 6 to 6.50; extent, 10¼ to 11; wing, 3.45; tail, 2.95. Iris, dark brown; bill, yellow and black; feet, brown.

Hab.—North America generally. Greenland, (Reinhardt.) Accidental in Europe.

The American tit lark is abundant on the prairies of the Territory during winter, and, probably, breeds on the mountains. In September it arrives on the prairies along the coast in large flocks, and remains until May; but I believe none are found there during summer.—C.

Found by me in St. Mary's valley, Washington Territory.—S.

Sub-Family SYLVICOLINAE. The Wood Warblers.

GEOTHLYPIS TRICHAS, Cabanis.

Maryland Yellow-throat.

Turdus trichas, Linn. Syst. Nat. I, 1766, 293.—Gmelin, Syst. Nat. I, 1788.

Sylvia trichas, Latham, Ind. Orn. II, 1790.—Vieillot, Ois. Am. Sept. II, 1807, 28; pl. xxviii & xxix.—Aud. Orn. Biog. I, 1832, 120: V, 1838, 463, pl. 23 & 240.

Geothlypis trichas, Cabanis, Mus. Hein. 1850, 16.—Baird, Gen. Rep., Birds, p. 241.

Sylvia marilandica, Wilson, Am. Orn. I, 1808, 88; pl. vi, f. 1.

Trichas marilandica, Bon. List, 1838.—Ib. Consp, 1850, 310.—Aud. Syn. 1839, 65.—Ib. Orn. Biog. II, 1841, 78; pl. 102.

Sylvia roscoe, Aud. Orn. Biog. I, 1832, 124; pl. 24. (Young male.)

Trichas roscoe, Nuttal, Man. I, 2d ed. 1840, 457.

Sp. Ch.—Upper parts olive green, tinged with brown towards the middle of the crown; chin, throat, and breast as far as the middle of the body, with the under tail coverts bright yellow. Belly dull whitish buff. Sides of body strongly tinged with light olive brown; under coverts glossed with the same. A band of black on the forehead, (about .20 of an inch wide in the middle,) passing backwards so as to cover the cheek and ear coverts, and extending a little above the eye; this band bordered behind by a suffusion of hoary ash, forming a distinct line above the eye, and widening behind the ear coverts into a larger patch, with a yellow tinge. In winter dress, and in the female, without the black mask, the forehead tinged with brown, the yellow of the throat less extended, the eyelids whitish, and an indistinct superciliary line yellowish. Length of male, 4. 80 to 5. 50; extent, 6. 75; wing, 2. 40; tail, 2. 20. Bill black, iris brown, feet pale brown.

Hab.—North America from Atlantic to Pacific.

The Maryland yellow-throat is very common in the Territory during summer, preferring, as usual, the bushes along brooks and swamps. I observed its arrival about the first of April, and it remains until September.—C.

I have obtained several specimens of this bird at Fort Steilacoom, in the neighborhood of which they are always summer residents, but not in such numbers as the next species.—S.

GEOTHLYPIS MACGILLIVRAYI, Baird.

Macgillivray's Warbler.

Sylvia macgillivrayi, Audubon, Orn. Bio. V, 1839, 75; pl. 399. (*Sylvia philadelphia* on plate.)

Trichas macgillivrayi, Aud. Syn. 1839, 64.—Ib. Birds Amer. II, 1841, 74; pl. 100.

Sylvia tolmioei, Townsend, J. A. N. Sc. VIII, 1839, 149, 159. (Read April, but the volume really not published till 1840.)

Sylvia tolmiei, Townsend, Narrative, 1839, 343.

Trichas tolmiaei, Nuttall, Man. I, 2d ed., 1840, 460.

Geothlypis macgillivrayi, Baird, Gen. Rep. p. 244.

Sp. Ch —Head and neck all round, throat and fore part of the breast, dark ash color; a narrow frontlet, loral region and space round the eye (scarcely complete behind) black. The eyelids above and below the eye (not in a continuous ring) white. The feathers of the chin, throat, and fore breast really black, with ashy gray tips, more or less concealing the black. Rest of upper parts dark olive green, (sides under the wings paler;) of lower, bright yellow. Female with the throat paler and without any black. Length of male, 5 to 5. 75 inches; extent, 7. 25 to 8; wing, 2. 45; tail, 2. 45; iris and feet brown, bill black above, white below.

Hab.—Pacific coast of North America, south to Gulf of California and across to Monterey, Mexico. In Rocky mountains to Fort Laramie.—(Dr. Cooper.)

This western yellow-throat is very common about Puget Sound, and, unlike the last, frequents the underbrush in the dry woods, keeping commonly close to the ground, but occasionally singing from a low tree a song somewhat similar to that of the above species. Its nest I

found built in a small bush not more than a foot above the ground, and very loosely built of straws with but little soft lining. The eggs, laid in June, were white. The young resemble the parents, but want the gray on the head and neck, those parts being greenish above and pale yellow below. I believe the gray of the head and neck soon wears off in the adult, as they look faded and greenish after June. I have since found it common in August as far east as Fort Laramie, Nebraska Territory.—C.

This bird is very abundant between the Cascade mountains and the Pacific coast. In habit it resembles others of the group, and is generally found among bushes and thickets. Dr. Townsend, who first described the species, named it in honor of William Frazer Tolmie, M. D., at that time surgeon to the honorable Hudson Bay Company, and now a chief factor in the same corporation. During my residence in Washington Territory, as a neighbor to Dr. Townsend, I was frequently under obligations to him for curious and rare specimens in different branches of natural history, for many professional favors, and for oft repeated kind hospitality, which was all the more agreeable because seasoned with the discourse of the highly educated intelligent gentleman—mine host.

A specimen obtained by me at Fort Steilacoom had the bill dusky above, paler below; legs *pale* flesh color inclined to dusky. In these characters they differ slightly from those recorded in the specific character given above, which are from specimens obtained by Dr. Cooper.

These, as well as the other ground warblers, seem to be entirely insectivorous, all the stomachs which I have examined containing fragments of coleoptera and other insects.

They are not a very shy species, but as they frequent thick brush and heavily leaved thickets, behind the foliage of which they are so thoroughly secreted, it is frequently difficult to obtain them.—S.

HELMINTHOPHAGA CELATA, Baird.

Orange-crowned Warbler.

Sylvia celata, Say, Long's Exped. R. Mts. I, 1823, 169.—Bonap. Am. Orn. I, 1825, 45; pl. v, f. 2.—Bon. Syn, 1828, 38.—Nuttall, Man. I, 1832, 413, (*Dacnis.*)—Aud. Orn. Biog. II, 1834, 449; pl. 178.

Sylvicola celata, Rich. List, 1837.

Vermivora celata, (Jardine,) Bonap. List, 1838.

Helinaia celata, Aud. Syn. 1839, 69.—Ib. Birds Am. II, 1841, 100; pl. 112.

Helmitheros celata, Bonap. Conspectus, 1850, 315.—Baird, Gen. Rep,. p. 257.

Sp. Ch.—Above olive green, rather brighter on the rump. Beneath entirely greenish yellow, except a little whitish about the anus; the sides tinged with olivaceous. A concealed patch of pale brownish orange on the crown, hidden by the olivaceous tips to the feathers. Eyelids and an obscure superciliary line yellowish, a dusky obscure streak through the eye. No white spots on wings or tail of female, with little or none of the orange on the crown. Length, 4.70 to 5; extent, 7 to 7.50; wing, 2. 25; tail, 2. 00.

Hab.—Mississippi river to the Pacific; south to northern Mexico.

The orange-crowned warbler is very abundant in the vicinity of Fort Steilacoom. One also obtained at Fort Dalles, O. T.

Habits much like those of the ground warbler. They keep in shady places among thick brush, generally near water courses.—S.

DENDROICA OCCIDENTALIS, Baird.

Western Warbler.

Sylvia occidentalis, Townsend, J. A. N. Sc. VII, II, 1837, 190.—Ib. Narrative, 1839, 340.—Audubon, Orn. Biog. V, 1839, 55; pl. 55.

Sylvicola occidentalis, Bonap. List, 1838.—Ib. Consp. 1850, 308.—Aud. Syn. 1839, 60.—Ib. Birds Am. II, 1841, 60; pl. 93.

Mniotilta occidentalis, GRAY, Genera.

Dendroica occidentalis, BAIRD, Gen. Rep. Birds, p. 268.

SP. CH.—Crown, with sides of the head and neck, continuous bright yellow, feathers of the former edged narrowly with black; rest of upper parts dark brown, edged with bluish gray, so much so on the back and rump feathers as to obscure the brown, and with an olivaceous shade. Chin, throat, and fore part of breast, (ending convexly behind in a sub-crescentic outline,) black; rest of under parts white, faintly streaked on the sides with black. Two white bands on the wing, two outer tail feathers, and the terminal portion of a third, white, the shafts, and an internal streak towards the end, dark brown. Bill jet black. Length, 5.75; extent, 8; wing, 2.75.

Hab.—Pacific coast.

I obtained two specimens of this bird in June, 1856, at Fort Steilacoom. They are a shy bird, feeding and spending most of the time in the tops of the highest fir trees, thus rendering it exceedingly difficult to reach them with fine shot. Unfortunately, both of my specimens were lost while being sent to Washington City. They therefore were not examined by Professor Baird while making up the general report.

The specimens I obtained both differed in their measurements from those of the bird obtained by Mr. Samuels in California. The color of the legs differed from that included in the list of specific characters given by Professor Baird.

Specimen No. 392 of my collection, a male, killed June 14, 1856, at Fort Steilacoom, measured 5.75—8—2.75.

Iris hazel, bill black, legs greyish black. This bird, in plumage, agreed exactly with that described by Nuttall.

Another, marked 449, also a male, measured 5.50—8.12.

I do not think that this species is rare on the Pacific coast; but from the inaccessible nature of its favorite resorts it will be a long time before enough are obtained to make it common in cabinets of natural history.—S.

DENDROICA TOWNSENDII, Baird.

Sylvia townsendii, ("NUTTALL,") TOWNSEND, J. A. N. Sc. Ph. VII, II, 1837, 191.—IB. Narrative, 1839, 341.—AUD. Orn. Biog. V. 1839, 36; pl. 393.

Sylvicola townsendii, BONAP. List, 1838.—IB. Consp. 1850, 308.—AUD. Syn. 1839, 59.—IB. Birds Am. II, 1841, 59; pl. 92.—NUTTALL, Man. I, 2d ed. 1840, 446.

Dendroica townsendii, BAIRD, Gen. Rep. Birds, p. 269.

I saw on December 20, 1854, at Shoalwater bay, a warbler, in company with a flock of titmice and other small birds, which, I have no doubt, was that named by Audubon in honor of Townsend, its discoverer. Nuttall speaks of it as early a passenger through Oregon on its way northward, and as frequenting only the summits of the trees. It may, therefore, winter in the Territory in small numbers, and probably mostly in the interior. In November, 1855, I saw a small flock of this species in California, frequenting the willows in a wet low meadow, and obtained a pair.—C.

Mr. Philip Lutley Sclater, of London, has several excellent specimens of *Sylvicola townsendii*, obtained from the west coast of Central America. It probably extends in summer as far north as Russian America, thus having a very extended range along the Pacific coast. In Oregon, according to Mr. Townsend, it frequents the almost inaccessible tops of the Douglas fir, from whence it is very difficult to be obtained. It probably has many habits in common with the preceding species.—S.

DENDROICA NIGRESCENS, Baird.

Black-throated Gray Warbler.

Sylvia nigrescens, Townsend, J. A. N. Sc. Ph. VII, II, 1837, 191.—Ib. Narrative, 1839, 341.—Aud. Orn. Biog. V, 1839, 57; pl. 395.

Vermivora nigrescens, Bonap. List, 1838.—Nuttall, Man. I, 2d ed. 1840, 471.

Sylvicola nigrescens, Aud. Syn. 1839, 60.—Ib. Birds Amer. II, 1841, 62; pl. 94.—Bonap. Consp. 1850, 308.

Rhimanphus nigrescens, Cab. Mus. Hein. 1850, 20.

Dendroica nigrescens, Baird, Gen. Rep. Birds, p. 270.

Sp. Ch.—Head all round, fore part of the breast, and streaks on the side of the body, black; rest of under parts, a stripe on the side of the head, beginning acutely just above the middle of the eye, and another parallel to it, beginning at the base of the under jaw (the stripes of opposite sides confluent on the chin) and running further back, white. A yellow spot in front of the eye. Rest of upper parts bluish gray. The interscapular region and upper tail coverts streaked with black. Wing coverts black, with two narrow white bands; quills and tail feathers brown, the two outer of the latter white, with the shafts and a terminal streak brown; the third brown, with a terminal narrow white streak. Bill black; feet brown; iris brown. Length, 5.25 to 6.38; extent, 7.75; wing, 2.30; tail, 2.10.

Hab.—Pacific coast of United States; Fort Thorn, New Mexico.

Moderately abundant near Fort Steilacoom. Generally found on oak trees. Habits much like those of the *D. Audubonii*. It generally arrives from the south about the first week in April.—S.

I only saw one pair of the dusky warbler at Puget Sound, which seemed to have a nest, though I sought for it in vain. Townsend found it "abundant in the forests of the Columbia."—(Nutt.) Its song is faint and unvaried.—C.

DENDROICA CORONATA, Gray.

Yellow-rumped Warbler.

Motacilla coronata, Linnaeus, Syst. Nat. I, 1766, 333.—Gmelin, Syst. Nat. I, 1788, 974, (male.)

Sylvia coronata, Latham, Index. Orn. II, 1790, 538.—Vieillot, Ois. Am. Sept. II, 1807, 24; pl. lxxviii, lxxix.—Wilson, Am. Orn. II, 1810, 138; pl. xvii, f. 4, (summer)—II, 356; pl. xlv, f. 3, (winter.)—Nuttall, Man. I, 1832, 361.—Aud. Orn. Biog. II, 1834, 303; pl. cliii.

Sylvicola coronata, Swainson, F. Bor. Am. II, 1831, 216.—Bonap. List, 1838.—Ib. Conspectus, 1850, 307.—Aud. Synop. 1839, 76.—Ib. Birds Amer. II, 1841, 23; pl. lxxvi.

Dendroica coronata, G. R. Gray, Genera, 2d ed. Suppl. 1842, 8.—Baird, Gen. Rep. Birds, p. 272.

Sp. Ch.—Above bluish ash, streaked with black. Under parts white. The fore part of breast and the sides black, the feathers mostly edged with white. Crown, rump, and sides of breast yellow. Cheeks and lores black. The eyelids and a superciliary stripe, two bands on the wing and spots on the outer three tail feathers, white. Female of duller plumage and browner above. Length, 5.65; extent, 9.25; wing, 3.00; tail, 2.50; iris brown; bill and feet black.

Hab.—Eastern North America to the Missouri plains. Stragglers seen on Puget Sound.

On the 1st of May, 1856, I obtained a bird, which, according to the description in Audubon's synopsis, appeared to belong to the present species, the "white throat" being present. In all other respects this bird resembled the *S. Audubonii*. It was shot in the same situation frequented by birds of the latter species, and its habits appeared identical.—S.

I saw, on Whidby's island, in April, two of the yellow-crowned warbler, similar to the last, and noticing the distinguishing white color of the chin, besides other less prominent differences, I shot one. It seemed to agree exactly with the eastern bird, and is a curious but not the only instance of two so closely allied species being found in the same region. As these are the only ones I met with, it must be rare in the Territory. My specimen was unfortunately lost.—C.

DENDROICA AUDUBONII, Baird.

Audubon's Warbler.

Sylvia audubonii, Townsend, J. A. N. Sc. Ph. VII, II, 1837 —Ib. Narrative, 1839, 342.—Aud. Orn. Biog. V, 1839, 52; pl. 395.

Sylvicola audubonii, Bonap. List, 1838.—Aud. Syn. 1839, 52.—Ib. Birds Amer. II, 1841, 26; pl. 77.

Dendroica audubonii, Baird, Gen. Rep. Birds, p. 273.

Sp. Ch.—Above bluish ash, streaked with black, most marked on the middle of the back; on head and neck bluish ash. Middle of crown, rump, chin, and throat, and a patch on the side of the breast, gamboge yellow. Space beneath and anterior to the eyes, fore part of breast and sides, black; this color extending behind on the sides in streaks. Middle of belly, under tail coverts, a portion of upper and lower eyelids, and a broad band on the wings, with a spot on each of the four or five exterior tail feathers, white; rest of tail feathers black. Female brown above; the other markings less conspicuous and less black. Length, 5.75; extent, 9 25; wings, 3.20; tail, 2.25. Female smaller; iris brown; bill and feet black.

Hab.—Pacific coast of United States to central Rocky mountains. South to Mexico.

Audubon's warbler is the most abundant species in the Territory, and probably is a constant resident in the mild winters, as I noticed them abundant at the Straits of De Fuca as early as March 17. Its lively song is heard everywhere on the borders of woods, even on the coast, where few of these small species visit. I never could discover the nest, which is probably built high in the branches of the evergreens which it frequents in summer. In fall the straggling flocks of young birds wander about shrubby places in large numbers, making no sound but a sharp chirping call.—C.

This is the most abundant wood-warbler found in the western section of Washington Territory. I have procured many specimens, both for the Smithsonion Institution and for private exchanges. In the vicinity of Fort Steilacoom this bird is found, principally in the oak trees (*Q. Garryana*) on the Nisqually plains. In the spring it arrives a little earlier than the other warblers. In the spring of 1856 I obtained the first of that season about March 20. The young are generally able to fly by June 25.—S.

DENDROICA AESTIVA, Baird.

Yellow Warbler.

Motacilla aestiva, Gmelin, Syst. Nat. I, 1788, 996.

Sylvia aestiva, Latham, Index Orn. II, 1790, 551.—Vieillot, Ois. Am. Sept. II, 1807, 35; pl. xcv.—Bonap. Obs. Wils. 1826, No. 144.—Aud. Orn. Biog. I, 1831, 476; pl. 95, 35.—Nutt. Man. I, 1832, 370.

Sylvicola aestiva, Swainson, F. Bor. Am. II, 1831, 211.—Bonap. List, 1838.—Aud. Syn. 1839, 57.—Ib. Birds Amer. II, 1841, 50; pl. 88.

Rhimamphus aestivus, Bonap. Consp. 1850, 311.—Cabanis, Mus. Hein. 1851, 19.—Ib. Journ. Orn. III, 1855, 472, (Cuba.)

Sylvia citrinella, Wilson, Am. Orn. II, 1810, 111; pl. xv. f. 5.

Sylvia childreni, Aud, Orn. Biog. I, 1831, 180; pl. 35. (Immature.)

? Sylvia rathbonia, Aud. Orn. Biog. I, 1831, 333; pl. 65.

? Sylvicola rathbonia, Aud. Syn. 1839, 58.—Ib. Birds Amer. II, 1841, 53; pl. 89.

? Motacilla petechia, Linn. Syst. Nat. I, 1766, 334.—Gmelin, I, 1788, 983.

Dendroica aestiva, Baird, Gen. Rep. Birds, p. 282.

Sp. Ch.—Bill lead color. Head all round, and under parts generally bright yellow; rest of upper parts yellow olivaceous, brightest on the rump. Back with obsolete streaks of dusky reddish brown. Fore breast and sides of the body streaked with brownish red. Tail feathers bright yellow; the outer webs and tips, with the whole upper surfaces of the innermost one, brown; extreme outer edges of wing and tail feathers olivaceous, like the back; the middle and greater coverts and tertials edged with yellow, forming two bands on the wings. Female similar, with the crown olivaceous, like the back, and the streaks wanting on the back, and much restricted on the under parts. Tail with more brown. Iris brown. Feet dingy flesh color. Length of male, 5. 25; extent, 7. 75; wing, 2. 66; tail, 2. 25. (940.)

Hab.—United States from Atlantic to Pacific; south to Guatemala and West Indies.

The summer yellow bird is abundant in this Territory, having the same habits and song as in the eastern States. I noticed their arrival in large numbers at the Straits of De Fuca as early as April 8. Its nest is built in a bush but a few feet from the ground, formed of fibres of roots, bark, &c., and the eggs, about five in number, are white, sprinkled with spots near the larger end.—C.

This bird is abundant among the scrub oaks, thickets, and bushes on the Nisqually plains. The late moult commences early in August May 3, 1856, Fort Steilacoom, Washington Territory. Specimen 359. Bill, grayish blue; legs, pale.—S.

MYIODIOCTES PUSILLUS, Bonap.

Green Black-cap Flycatcher.

Muscicapa pusilla, Wilson, Am. Orn. III, 1811, 103; pl. xxvi, f. 4.
Wilsonia pusilla, Bonap. List, 1838.
Sylvania pusilla, Nuttall, Man. I, 2d ed. 1840, 335.
Myiodioctes pusillus, Bonap. Conspectus, 1850, 315.—Baird, Gen. Rep. Birds, p. 293.
Sylvia wilsonii, Bonap. Obs. Wilson, 1826, No. 127.—Nuttall, Man. I, 1832, 408.
Muscicapa wilsonii, Aud. Orn. Biog. II, 1834, 148; pl. 124.
Myiodioctes wilsonii, Aud. Syn. 1839, 50.—Ib. Birds Am. II, 1841, 21; pl. 75.

Sp. Ch.—Forehead, line over and around the eye, and under parts generally bright yellow. Upper part, olive green; a square patch on the crown lustrous black. Sides of body and cheek tinged with olive. No white on wings or tail. Female similar; the black of the crown obscured by olive green.

Length, 4. 75 to 6; extent, 5. 25 to 8. 75?; wing, 2. 25; tail, 2. 30.

Hab.—United States from Atlantic to Pacific; south to Guatemala.

This bird is very abundant in the neighborhood of Fort Steilacoom, frequenting thickets and small scrub oak groves. In habits it much resembles the *Helminthophaga celata*, flitting about among the dense foliage of bushes and low trees in a busy restless manner, like the "little joker," "now you see him, now you don't." Its cry is a short chit-chat call.—S.

I have seen two or three times on the coast a yellow warbler with a black crown, which was probably Wilson's flycatcher, found by Nuttall in Oregon. I only noticed them in spring and fall.—C.

Sub-Family TANAGRINAE—The Tanagers.

PYRANGA LUDOVICIANA, Bonap.

Louisiana Tanager.

Tanagra ludoviciana, Wilson, Am. Orn. III, 1811, 27; pl. xx, f. 1.—Bon. Obs. 1826, 95.—Aud. Orn. Biog. IV, 1838, 385: V, 1839, 90; pl. 354, 400.
Tanagra (Pyranga) ludoviciana, Bonap. Syn. 1828, 105.—Nuttall, Man. I, 1832, 471.
Pyranga ludoviciana, Rich. List, 1837.—Bonap. List, 1838.—Aud. Syn. 1839, 137.—Ib. Birds Amer. III, 1841, 211; pl. 210.—Sclater, Pr. Zool. Soc. 1856, 125.—Baird, Gen. Rep. Birds, p. 303.

Sp. Ch.—Bill shorter than the head. Tail slightly forked; first three quills nearly equal. Male, yellow; the middle of the back, the wings, and the tail, black. Head and neck all round strongly tinged with red; least so on the sides. A band of yellow across the middle coverts, and of yellowish white across the greater ones; the tertials more or less edged with whitish. Female, olive green above, yellowish beneath; the feathers of the interscapular region dusky, margined with olive. The wings and tail rather dark brown, the former with the same marks as the male. Length, 7.25; wing, 3. 60; tail, 2. 85. Legs and feet dusky lead color; bill pale dusky green, darker on the ridge and at the base.

Hab.—From the Black Hills to the Pacific; south to Mexico.

This beautiful tanager arrives at Puget Sound about May 15, and is a common summer resident in the Territory, especially near river banks and prairies where deciduous trees grow. Its song much resembles that of the black-winged red-bird, being of a few notes only, rather faintly whistled in the manner of the robin, and often sounding as if the bird was distant when it is quite near. I never could discover the nest of this bird, which is said to be built high in an evergreen tree. Its range is, doubtless, throughout the Territory, as I have shot it east of the Rocky mountains, and up to the 49th degree of latitude.—C.

The beautiful Louisiana tanager is quite abundant in certain seasons in the vicinity of Fort Steilacoom. In 1854 but a limited number made their appearance, while, on the contrary, in the summer of 1856 they were so abundant that I could readily have obtained a hundred specimens. I have had frequent opportunities of studying their habits, and have never yet seen them descend to the low bushes, or the ground, as stated by Nuttall, the reverse being the rule, (at least at Puget Sound ;) the difficulty being generally to find the bird sufficiently low down on fir tree branches to allow fine shot to reach it with any degree of certainty. The colors of the plumage of the male and female compare relatively much as do those of opposite sexes of the *Carpodacus purpureus*, or of the *Curvirostra americana.*

The favorite habitat of the species, in those localities where I have observed them, is among the tall red fir trees belonging to that magnificent species the *Abies douglassii.* They seemingly prefer the edges of the forest, rarely retiring to its depths unless for concealment when alarmed. In early summer, at Fort Steilacoom, they are generally seen during the middle of the day sunning themselves in the firs, occasionally darting from one of these trees to another, or to some of the neighboring white oaks (*Q. Garryana*) on the prairie. Later in the season they may be seen very actively flying about in quest of insect food for their young. On the 10th of July, 1856, I saw one of these birds carrying a worm or insect in its month, from which I inferred that the young were then hatched out. Both sexes during the breeding season are much less shy, the males during the day time frequently sitting on some low limb, rendering the scene joyous with their delightful melody.

The bill of a specimen examined by me was quite sticky, as if smeared with the resinous exudation of their favorite firs. I opened the stomach of this bird and found it filled with insects, principally coleoptera. Among these I saw many fragments of the large green *Buprestis*, found generally on the Douglas fir trees. I saw no specimens of any other class of insects than coleoptra among the fragments, excepting *obscure* indications of wasps, or some other *Hymenoptera.*

Note.—I obtained a large number of females of this species, which were transmitted to Prof. Baird, but unfortunately lost. A more extended description of the ordinary plumage of birds of this sex than is contained in the description given in the General Report may be of interest.

Sp. Ch.—Beneath yellow, but not so bright as the male. Head and neck yellowish dusky green. Forehead slightly brighter than the crown. Back greenish dusky, tinged with grey; in some cases the back is of a plainer dusky, the admixture of grayish green not being so apparent. Throat, breast, vent, and lower tail coverts, bright yellow, inclining to white on the abdomen, and to ash on the sides. Two bars on the wings; one yellowish white, produced by the tips of the greater coverts of the secondaries; the other yellow and better defined, formed by the ends of the second row of lesser coverts. External margin of the tail feathers greenish.—S.

Family HIRUNDINIDAE—The Swallows.

HIRUNDO HORREORUM, Barton.

Barn Swallow.

Hirundo horreorum, BARTON, Fragments N. H. Penna. 1799, 17.—BAIRD, Gen. Rep. Birds, p. 308.
Hirundo rufa, VIELLIOT, Ois. Am. Sept. I, 1807, 60; pl. xxx. (Not of Gmelin.)—CASSIN, Illust. I, 1855, 243. BREWER, N. Am. Ool. I, 1857, 91; pl. v, f. 63—67, eggs.
Hirundo americana, WILSON, Am. Orn. V, 1812, 34; pl. xxxviii, f. 1, 2. (Not of Gmelin.)—RICH. F. B. A. 11, 1831, 329.
Hirundo rustica, AUDUBON, Orn. Biog. II, 1834, 413; pl. 173.—IB Syn. 1839, 35.—IB Birds Am. I, 1840, 181; pl. 48. (Not of Linnaeus.)

SP. CH.—Tail very deeply forked; outer feathers several inches longer than the inner, very narrow towards the end. Above glossy blue, with concealed white in the middle of the back. Throat chestnut; rest of lower part reddish white, not conspicuously different. A steel blue collar on the upper part of the breast, interrupted in the middle. Tail feathers with a white spot near the middle, on the inner web. Female with the outer tail feather not quite so long. Length, 6.90 inches; wing, 5; tail, 4. 50.

Hab.—North America, from Atlantic to Pacific.

The barn swallow seems to be limited by the Columbia river, as I have seen none at Puget Sound, or other more northern places. Near the mouth of the river they built in large numbers in the high caverns formed by the sea in Cape Disappointment, and into which the tide flows, the base of the rock being exposed to the full force of the waves which break against it.

They had also lately begun to build under the eaves of houses.—C.

I saw nests of what I took to be this species of birds in caves and the hollows of cliffs near the Bear's Paw mountains, not far from Fort Benton, Nebraska.—S.

HIRUNDO LUNIFRONS, Say.

Cliff Swallow.

Hirundo lunifrons, SAY, Long's Exped. R. Mts. II, 1823, 47.—CASSIN, Illust. I, 1855, 243.—BREWER, N. Am. Ool. I, 1857, 94; pl. v. No. 68—73, egg.—BAIRD, Gen. Rep. Birds, p. 309.
Hirundo opifex, DEWITT CLINTON, Ann. N. Y. Lyc. I, 1824, 161.
Hirundo respublicana, AUDUBON, Ann. N. Y. Lyc. I, 1824, 164.
Hirundo fulva, BONAP. Am. Orn. I, 1825, 63; pl. ii. (Not of Vielliot.)—AUDUBON, Orn. Biog. I, 1831, 353; pl. 58.—IB. Syn. 1839, 35.—IB. Birds Am. I, 1840, 177; pl. 47.

SP. CH.—Crown and back steel blue; the upper part of the latter with concealed pale edges to the feathers. Chin, throat, and sides of the head dark chestnut; breast fuscous; belly white. A steel blue spot on throat. Rump light chestnut; forehead brownish white; a pale nuchal band. Tail slightly emarginate. Length about 5 inches; wing, 4.40; tail, 2.20.

Hab.—North America, from Atlantic to Pacific.

The cliff swallow seems to be rather scarce as yet north of the Columbia river. I saw none in the bare mountainous regions traversed in 1853, though apparently adapted to their habits. They were almost unknown about Puget Sound, though at Olympia I noticed a few flying about the streets in July, which had nests in some tall dead trees near the town. At Vancouver I saw none, though south of there, at Portland, only seven miles distant, they had many nests under the eaves of high buildings, and were common in all the towns of Oregon.

Nuttall mentions their building on the side of "Pillar rock," and there are many cliffs along the Columbia where they probably build. They may become more abundant with the increase of settlements, as in the eastern States.—C.

Moderately abundant about the basaltic cliffs near Fort Dalles, Oregon Territory, where it makes its appearance in the spring simultaneously with *H. bicolor* and *H. thalassina*, but is not so numerously found.—S.

HIRUNDO BICOLOR, Vieillot.

White-bellied Swallow.

Hirundo bicolor, Vieillot, Ois. Am. Sept. I, 1807, 61; pl. xxxi.—Audubon, Orn. Biog. 1831, 491; pl. 98.—Ib. Syn. 1839, 35.—Ib. Birds Amer. I, 1840, 175; pl. 46.—Cassin, Illust. I, 1855, 244.—Brewer, N. Am. Oology, I, 1857, 100; pl. iv, fig. 47. (Egg.)—Baird, Gen. Rep. Birds, p. 310.

Herse bicolor, Bonap. Conspectus, 1850, 341.

Hirundo viridis, Wilson, Am. Orn. V, 1812, 49; pl. xxxviii.

Sp. Ch.—Glossy metallic green above; entirely white beneath. Female much duller in color.

Length, 6 to 6.25 inches; extent, 3.50; wing, 5.00; tail, 2.65. Iris and feet, brown; bill, black.

Hab.—North America, from Atlantic to Pacific.

The white-bellied swallow is another common species in the western portions of the Territory, building even along the damp and windy coast generally shunned by small land birds. It builds in hollow trees, and does not appear to seek the accommodations of a box or knot-hole in a building.—C.

Specimens of this bird, or of the California variety mentioned by Cassin, (vide synopsis,) were obtained by me both at Fort Steilacoom, W. T., and Fort Dalles. They arrive in the spring simultaneously with the *H. thalassina*. Although not nearly so plentiful as the latter species, they exceed in number the *H. lunifrons*.—S.

HIRUNDO THALASSINA, Swainson.

Violet-green Swallow.

Hirundo thalassina, Swainson, Taylor's Philos. Mag. I, 1827, 365.—Aud. Orn. Biog. IV, 1838, 597; pl. 385.—Ib. Birds Am. I, 1840, 186; pl. 49.—Cassin, Illust. I, 1855, 245.—Brewer, N. Am. Oology, I, 1857, 102; pl. v, f. 74. (Egg.)—Baird, Gen. Rep. Birds, p. 311.

Sp. Ch.—Tail acutely emarginate. Beneath pure white. Above soft velvety green, with a very faint shade of purplish violet concentrated on the nape into a transverse band. Rump rather more vivid green; tail coverts showing a good deal of purple. Colors of female much more obscure.

Length, 4.75 to 5; extent, 12.25; wing, 4.50; tail, 2. *Male:* length, 5; extent, 12¼ inches. Iris, brown; feet, paler; bill, black.

Hab.—Rocky mountains to Pacific; south to Mexico; east to Saltillo, Mexico.

The brilliant little sea-green swallow arrives at Puget Sound early in May, with the other species, and frequents entirely the high prairies bordered with oaks and other deciduous trees. It builds in the knot-holes of these trees, or in deserted woodpecker's nests. It associates much with the next species, which has similar habits. Its song is varied and pleasing, but very weak. I have never seen it along the cooler coast.—C.

This beautiful swallow is abundant throughout the interior of Oregon and Washington Territories. I have observed it arrive at Puget Sound about the 10th of May, where it breeds and remains as a summer resident. The place chosen for its nest is generally a knot-hole in oak or other trees. In habits and mode of flight it scarcely differs from the other species of this genus.

S.

COTYLE SERRIPENNIS, Bonap.

Rough-winged Swallow.

Hirundo serripennis, Aud. Orn. Biog. IV, 1838, 593.—Ib. Birds America, I, 1840, 193; pl. 51.

Cotyle serripennis, Bonap. Consp. 1850, 342.—Cassin, Illust. I, 1855, 247.—Brewer, N. Am. Oology, I, 1857, 106, fig. 50, (egg.)—Baird, Gen. Rep. Birds. p. 313.

Sp. Ch.—Tail slightly emarginate; first primary with the pennulae of the outer web much stiffened, with their free extremities recurved into a hook very appreciable to the touch. No feathers on the tarsus and toes. Above rather light sooty brown, beneath whitish gray, or light brownish ash, becoming nearly pure white in the middle of the belly and on the under tail coverts. Length, 5.50; extent, 12.50; wing, 4.28; tail, 2.23. Iris, brown; bill and feet, black.

Hab.—United States, from Atlantic to Pacific.

The rough-winged swallow is common about the sandy cliffs of the bays and inlets of this coast. It arrives near the Columbia river in May, and remains until the middle of August, when, though in so mild a climate, all the swallows go southward, their last broods being still scarcely able to fly. This species burrows holes in soft, sandy banks near the tops of cliffs, and has the same habits as the bank swallow of the east. Their only notes are a few chirping calls.—C.

Rather abundant in both Oregon and Washington Territories. Several specimens were obtained by me and forwarded to the Smithsonian museum.—S.

PROGNE PURPUREA, Boie.

Purple Martin.

Hirundo purpurea, Linn. Syst. Nat. I, 1766, 344.—Audubon, Orn. Biog. I, 1831, 115; pl. xxiii.—Ib. Birds Am. I, 1840, 170; pl. xlv.

Progne purpurea, Boie, Isis, 1826, 971.—Bonap. List, 1838.—Cassin, Illust. I, 1855, 245.—Brewer, N. Am. Oology, I, 1857, 103; pl. iv, fig. 47, (egg.)—Baird, Gen. Rep. Birds, p. 314.

Hirundo subis, Linnaeus, Syst. Nat. I, 1766, 344, (second year.)

Hirundo violacea, Gm. Syst. Nat. I, 1788, 1026.

Sp. Ch.—Largest of N. American swallows. Closed wings rather longer than the deeply forked tail. Tarsi and toes naked. Color, in the old male, everywhere glossy steel blue, with purple and violet reflections. Female and immature male less brilliant above, pale brownish beneath, blotched with darker or with bluish. Length, 7.30; wing, 5.85; tail, 3.40.

Hab.—North America generally.

On the 23d of May, 1856, I obtained at Fort Steilacoom, Washington Territory, a specimen of *Progne*, agreeing very well with a description of *P. purpurea*, with which I at the time compared it. Unfortunately the skin was lost, with a large and valuable consignment of northwestern birds, which was despatched from Fort Steilacoom to the Smithsonian, but never reached its destination. I was especially sorry to lose this bird, as I wished it to be compared with such specimens of *P. chalybea* (vide Cassin's description of this species) as were in the museums of the Philadelphia Academy and Smithsonian Institution.

My specimen measured 8.50 by 16.38. It is not a common bird in Washington Territory, and I was only able to obtain this one specimen, although I saw several others at odd times. They were then met with in groves of scrub-oaks on the Nisqually plains.—S.

I never saw this bird in the Territory, where it must be rare.—C.

Family BOMBYCILLIDAE. Waxwings.

AMPELIS CEDRORUM, Baird.

Cedar Bird.

Ampelis garrulus, Var. β, Linn. Syst. Nat. I, 1766, 297.—Gm. I, 1788, 838.

Ampelis carolinensis, Gosse, Birds Jamaica, 1847, 197.—Bonap. Consp. 1850, 336.

Bombycilla carolinensis, Brisson, Orn. II, 1760, 337.—Aud. Orn. Biog. I, 1831, 227: V, 494; pl. 43.—Ib. Syn. 1839, 165.—Ib. Birds Amer. IV, 1842, 165; pl. 245.—Wagler, Isis, 1831, 528.

Bombycilla cedrorum, Vieillot, Ois. Am. Sept. I, 1807, 88; pl. lvii.—Ib. Galerie Ois. I, 1834, 186; pl. cxvii.

Ampelis americana, Wilson, Am. Orn. I, 1808, 107; pl. vii.

Ampelis cedrorum, Baird, Gen. Rep. Birds, p. 318.

Sp. Ch.—Head crested. General color reddish olive, passing anteriorly on the neck, head, and breast into purplish cinnamon; posteriorly on the upper parts into ash; on the lower into yellow. Under tail coverts white. Chin dark sooty black, fading insensibly into the ground color on the throat. Forehead, loral region, space below the eye, and a line above it on the side of the head, intense black. Quills and tail dark plumbeous, passing behind into dusky; the tail tipped with yellow; the primaries, except the first, margined with hoary. A short maxillary stripe, a narrow crescent on the infero-posterior quarter of the eye, white. Secondaries with horny tips, like red sealing wax. Length, 7.25; wing, 4.05; tail, 2.60.

Hab.—North America generally; south to Guatemala.

The cedar bird is much less common than in the cultivated Atlantic States. I have only seen them in summer in pairs and small families, and suppose the greater part of those raised here retire to the more open regions southward in the fall. Their irregular migrations are probably induced by want of food.—C.

Townsend says that this bird is found in Oregon. I have never *seen* it west of the Rocky mountains, but on several occasions have thought that I recognized its notes, when the brush being so thick, or from some other circumstance, I was unable to obtain a glimpse of the bird. This was at Fort Dalles. I think the species does not visit Puget Sound at all. If it does, it must be very scarce in that vicinity, as all my efforts to obtain even a single specimen were fruitless.—S.

MYIADESTES TOWNSENDII, Cabanis.

Townsend's Flycatcher.

Ptiliogonys townsendii, Aud. Orn. Biog. V, May, 1839, 206; pl. 419, f. 2.—Ib. Syn. 1839, 46.—Ib. Birds Amer. I, 1840, 243; pl. 69.—Townsend, Narrative, 1839, 338.—Nuttall, Man. I, 2d ed. 1840, 361.—Gambel, Pr. A. N. Sc. I, 1843, 261.

Culicivora townsendii, DeKay, N. Y. Zool. II, 1844, 110.

Myiadestes townsendii, Cabanis, Wiegm. Arch. 1847, I, 208.—Baird, Gen. Rep. Birds, p. 321.

? Myiadestes unicolor, Sclater, Pr. Zool. Soc. 1856, 299; 1857, 5. (Is very closely allied. Cordova Mexico.)

Sp. Ch.—Tail rather deeply forked. Exposed portion of spurious quill less than one-third that of the second; fourth quill longest; second a little longer than the sixth. Head not crested. General color bluish ash, paler beneath; under wing coverts white. Quills with a brownish yellow bar at the base of both webs mostly concealed, but showing a little below the greater coverts and alulae; this succeeded by a bar of dusky, and next to it another of brownish yellow across the outer webs of the central quills only. Tertials tipped with white. Tail feathers dark brown; the middle ones more like the back; the lateral with the outer web and tip, the second with the tip only, white. A white ring round the eye.

Length, 8.75 inches; extent, 12.80; wing, 4.50; tail, 3.85. (8234.)

Hab.—United States, from Rocky mountains and Black Hills to the Pacific; south to the borders of Mexico.

I obtained a specimen of this bird near Fort Laramie, Nebraska, in October, when it was apparently not uncommon there, and had much the habits of the flycatchers.—C.

I was fortunate enough to secure a specimen at Fort Steilacoom, Washington Territory, on

the 28th of April, 1856. It was shot by my servant, who described it as being excessively wild and difficult to approach.

This is the only specimen of the species I have seen, and I consider it therefore accidental west of the Cascade mountains.—S.

Family LANIIDAE.—The Shrikes.

COLLYRIO BOREALIS, Baird.

Great Northern Shrike; Butcher Bird.

Lanius septentrionalis, Bon. Syn. 1828, 72.—Bon. List, 1838.—Ib. Rev. et Mag. Zool. 1853, 294.—Nuttall, Man. I, 1832, 258.—Ib. I, 2d ed. 1840, 285. (Not of Gmelin.)

Lanius borealis, Vieillot, Ois. Am. Sep. I, 1807, 90; pl. I.—Sw. F. B. Am. II, 1831, 111.—Aud. Syn. 1839, 157.—Ib. Birds Amer. IV, 1842, 130; pl. 236.

Lanius excubitor, Forster, Phil. Trans. LXII, 1772, 382.—Wilson, I, 1808, 74; pl. v, f. 1.—Bon. Obs. 1826.—Aud. Orn. Biog. II, 1834, 534; pl. 192.

Collyrio borealis, Baird, Gen. Rep. Birds, p. 324.

Sp. Ch.—Above light bluish ash, obscurely soiled with reddish brown. Forehead, sides of the crown, scapulars, and upper tail coverts hoary white. Beneath white, the breast with fine transverse lines. Wings and tail black; the former with a white patch at base of primaries and tips of small quills; the latter with the lateral feathers tipped with white. Bill blackish brown; considerably lighter at the base. Black stripe from the bill through and behind the eye, but beneath the latter interrupted by a whitish crescent. *Female* and young with the gray soiled with brownish. Length, 9.85; wings, 4.50; tail' 4.80; its graduation, .90.

Length, 10¾ inches; extent, 14¼ inches; feet, black; bill, brownish black.

Hab.—Northern regions, from Atlantic to Pacific; in winter south, through most of the United States.

The northern shrike is only a winter resident in the Territory, appearing along the coast in November and remaining until March. It frequents bushy places, and seems to live chiefly on insects. I never saw them attack small birds, though often in company with them.—C.

I obtained one specimen of this shrike at St. Mary's valley, Washington Territory, in 1853. As a group the butcher birds are but poorly represented in number in Oregon or Washington Territories.—S.

Sub-Family VIREONINAE.—The Greenlets.

VIREO GILVUS, Bonap.

Warbling Flycatcher.

Muscicapa gilva, Vieillot, Ois. I, 1807, 65; pl. xxxiv.

Vireo gilvus, Bonap. Obs. Wilson, 1825, No. 123.—Nutt. I, 1832, 309.—Aud. Orn. Biog. II, 1834: 114; V. 1839, 433; pl. 118.—Ib. Birds Amer. IV, 1842, 149; pl. 241.—Baird, Gen. Rep. Birds, p. 335.

Muscicapa melodia, Wilson, Am. Orn. V, 1812, 85; pl. 42, fig. 2.

Sp. Ch.—Third, fourth, and fifth quills nearly equal; second and sixth usually about equal, and about .25 of an inch shorter than third; the exposed portion of spurious quill about one-fourth the third. Above greenish olive; the head and hind neck ashy, the back slightly tinged with the same. Lores dusky; a white streak from the base of the upper mandible above and a little behind the eye; beneath the eye whitish. Sides of the head pale yellowish brown. Beneath white, tinged with very pale yellow on the breast and sides. No light margins whatever on the outer webs of the wings or tail. Length about 5.50 inches; extent, 8.50; wings nearly 3. Spurious primary one-fourth the length of second. Iris, brown; feet, slate color; bill, brown.

Hab.—Atlantic to Pacific coast of the United States.

I did not notice the arrival of the warbling vireo, near Puget Sound, until about the middle of May, but it was quite common afterwards. Its song, more lively than in other species, was

generally heard at all hours of the day, from the top of the poplar, ash, and other deciduous trees, where it was always actively engaged in pursuing insects, even while singing; its song being frequently interrupted while it darted after one, began again as soon as it could swallow the victim.—C.

One specimen of this species I obtained at Fort Steilacoom, June 17, 1856. Upper mandible, dark dusky lead color; lower, pale bluish. Measurements, $5\frac{5}{8}$, $8\frac{3}{4}$. ♂.—S.

VIREO SOLITARIUS, Vieillot.

Blue-headed Flycatcher.

Muscicapa solitaria, Wilson, Am. Orn. II, 1810, 143; pl. 17, f. 6.

Vireo solitarius, Vieill. Nouv. Dict. 1817. Aud. Orn. Biog. I, 1831, 147: V, 1839, 432; pl. 23.—Ib. Syn. 1839.—Ib. Birds Amer. IV, 1842, 144; pl. 239.—Nutt. Man. I, 1832, 305.—Baird, Gen. Rep. Birds, p. 340.

Sp. Ch.—Spurious primary very small, not one-fourth the second, which is longer than the sixth. Top and sides of the head and upper part of neck dark bluish ash; rest of upper parts clear olive green. A white ring round the eye, interrupted in the anterior canthus by a dusky lore, but the white color extending above this spot to the base of the bill. Under parts white; the sides under the wings greenish yellow. Two bands on the wing coverts, with the edges of the secondaries, greenish white. Outer tail feather with its edge all round, including the whole outer web, whitish. Length, about 5.50 to 5.75 inches; extent, 9; wing, 2.40 to 3. Bill and feet, black; iris, brown.

Hab.—United States, from Atlantic to the north Pacific, (Washington Territory only?)

The solitary vireo is common in Washington Territory—arriving from the south in May, and frequenting chiefly the groves of oak in the interior. Its sweet and varied song is so closely imitated by the purple finch, that on one occasion, hearing both singing in the same tree, I could not distinguish any difference, and have no doubt that one had been attracted by the song of the other.—C.

This greenlet is rather common near Fort Steilacoom. In 1856 I obtained several specimens. Another killed at Fort Steilacoom measured 5.75; extent, 9.12; wing, 3. This and another specimen from the same locality differed from Nuttall's description of the species, in having the lower mandible scarcely lighter than the upper; also, the breasts were *not* "pale cinereous" but white, or white slightly tinged with yellowish. Throat *not* "tinged with greenish."—S.

Family LIOTRICHIDAE.

Sub-Family TROGLODYTINAE.—The Wrens.

THRIOTHORUS BEWICKII, Bonap.

Bewick's Wren.

Troglodytes bewickii, Aud. Orn. Biog. I, 1831, 96: V, 1838, 467; pl. 18.—Ib. Syn. 1839, 74.—Ib. Birds Amer. II, 1841, 120; pl. 118.—Nutt. Man. I, 1832, 434.—Lesson, Rev. Zool. 1840, 264.—Newberry. Zool. P. R. R. Surv. VI, iv, 1857, 80.

Thryothorus bewickii, Bonap. List, 1838.—Ib. Conspectus, 1850, 221.—Baird, Gen. Rep. Birds, p. 363.

Troglodytes spilurus, Vigors, Zool. Beechey's Voyage, 1839, 18; pl. iv, f. 1. California.

Sp. Ch.—Bill shorter than the head. Tail longer than the wings; much graduated. Upper parts rufous brown; beneath plumbeous white. A white streak over the eye, the feathers edged above with brown. Exposed surface of the wings and the innermost tail feathers closely barred with dusky; the remaining tail feathers mostly black, barred or blotched with white at the tips, and on the whole outer web of the exterior feather, and on the under tail coverts. Length, 5.50; extent, 7; wing, 2.25; tail, 2.50. Iris, brown; legs, gray; bill, black; lower mandible, white.

Var. spilurus, with longer bill; purer white beneath. Colors more grayish olivaceous above.

Hab.—North America, from Atlantic to Pacific; south to Mexico.

Bewick's wren seems to be the representative of the Carolina wren in the west, having all its talent and variety of song, but I believe *never* mimicking other birds, though its notes may sometimes resemble their songs. I have often been led through dense thickets and swamps by this deceiving songster, expecting to find some new bird. This and the winter wren are among the few birds that enliven the long rainy season with their songs, which are as constantly heard in the dullest weather as in the sunny spring. I could never discover its nest, which is probably built in the hollow of a stump or log. Young broods appear as early as June 1.—C.

This wren is very abundant near Puget Sound. It is a constant resident throughout the year, and is not less abundant during winter. In January and February it is found on sunny days among low thickets and crabapple brush. Here, in company with the smaller species, *T. hyemalis and parkmanni*, it may be seen flitting about on the ground and among low branches in quest of food. At this season they are very tame, allowing a man to approach without suspicion or evident fear. Its notes during cold weather are short and low. Later, however, during the breeding season, the voice of the male becomes harsh and loud, not much unlike that of the common house wren of the Atlantic States.—S.

CISTOTHORUS PALUSTRIS, Cabanis.

Long-billed Marsh Wren.

Certhia palustris, Wilson, Am. Orn. II, 1810, 58; pl. xii, f. 4.

Troglodytes palustris, Bonap. Obs. Wilson, 1824, No. 66.—Swainson, F. Bor. Am. II, 1832, 319.—Audubon, Orn. Biog. I, 1831, 500: V, 1839, 467; pl. 100. Ib. Birds Amer. II, 1841, 135; pl. 123. Newberry, Zool. Cal. & Or. Route; P. R. R. Rep. VI, iv, 1857, 80.

Thyrothorus palustris, Nuttall, Man. I, 1832, 439.—Bon. List, 1838.

Thryothorus arundineus, Vieillot, Nouv. Dict. XXXIV, 1819, 58. (Not *Troglodytes arundinaceus*, Vieillot, Ois. Am. II, pl. cviii.)

Thryothorus arundinaceus, Bonap. Consp. 1850, 220.

Telmatodytes arundinaceus, Cabanis, Mus. Hein. 1851, 78. (Type.)

Cistothorus (*Telmatodytes*) *palustris*, "Cab." Baird, Gen. Rep. Birds, p. 364.

Sp. Ch.—Bill about as long as head. Tail and wing nearly equal. Upper parts of a dull reddish brown, except on the crown, interscapular region, outer surface of tertials, and tail feathers, which are almost black: the first with a median patch like the ground color; the second with short streaks of white, extending round on the sides of the neck; the third indented with brown; the fourth barred with whitish, decreasing in amount from the outer feather, which is marked from the base to the fifth, where it is confined to the tips; the two middle feathers above like the back, and barred throughout with dusky. Beneath rather pure white, the sides and under tail coverts of a lighter shade of brown than the back; a white streak over the eye. Length, 5.50; extent, 9.75; wing, 2.08; tail, 2.00. Iris, brown; bill and feet, lighter brown.

Hab.—North America, from Atlantic to Pacific; north to Greenland. (Reinhardt.)

I found the marsh wren abundant in the salt marshes along the coast, and having observed them late in fall and early in March, I think they probably winter in the Territory.—C.

Abundant in the salt marshes at the mouths of the rivers emptying into Puget Sound. Like the rail, this bird allows a very near approach, until the intruder is very nearly upon it, when suddenly rising from the long grass, a quick rapid flight for eight or ten yards, a sudden plunge into the grass or sedge, and again the little creature is securely hidden. They have a very happy faculty of travelling rapidly through the grass, so that it is rare, even when haste is made, to flush the bird at the same point he was just before "marked down" at.

A specimen killed on the 18th of July, 1856, on the Nisqually marshes, Puget Sound, measured 4.75 inches in length; extent, 6.75. The upper mandible, dusky black; lower, dusky

horn color. Another killed at the same locality: length, 5½; extent, 7; bill, .75. These measurements show a considerable difference in the size of different individuals. I found the young of the year capable of flight by the middle of July.—S.

TROGLODYTES PARKMANNI, Aud.

Parkmann's Wren.

Troglodytes parkmanni, Aud. Orn. Biog. V, 1839, 310, not figured.—Ib. Syn. 1839, 76.—Ib. Birds Amer. II, 1841, 133; pl. 122.—Baird, Gen. Rep. Birds, p. 367.

Sp. Ch.—Similar in size and general appearance to *T. aedon*, with light line over the eye, &c.; the colors, however, grayer, the upper parts dark brown, the lower grayish white, with little or none of the rufous tinge of particular regions. Tail and wings about equal. Bill shorter than the head. Above brown, darker towards the head, brighter on the rump. The feathers everywhere, except on the head and neck, barred with dusky; obscurely so on the back, and still less on the rump. All the tail feathers barred from the base; the contrast more vivid on the exterior ones. Under tail coverts whitish, with dusky bars. An indistinct line over the eye, eyelids, and loral region, whitish. Cheeks brown, streaked with whitish.

Hab.—Western America, from the high central plains and Upper Missouri, to the Pacific.

"Parkmann's wren" of Audubon is common about Puget Sound, where it seems to take the place of the house wren, though less familiar. Its habits and song are very similar, but it seems to frequent only the vicinity of woods and piles of logs, not seeking a dwelling about buildings. It arrives about April 20.

I noticed wrens at Vancouver in June, 1853, which I took for the *house* wren, though the song struck me as different. One built in a horse's skull stuck upon a fence. I am uncertain whether they were not the above species, which may entirely replace the house wren in the Territory.—C.

I obtained several specimens of this bird at Fort Steilacoom; the birds differed so in measurements, that, when collected, I was frequently in doubt whether they were identical in species.

Smithsonian Cat. No.	Original number.	Length.	Stretch of wings.
7135	127	4.25	6.50
7136	363	5.50	7.00
7137	380 ♂	5.25	9.00

The voice of this species is harsh and unmusical.—S.

TROGLODYTES HYEMALIS, Vieillot.

Winter Wren.

Sylvia troglodytes, Wilson, Am. Orn. I, 1808, 139; pl. viii, fig. 6.

Troglodytes hyemalis, Vieillot, Nouv. Dict. XXXIV, 1819, 514.—Bonap. List, 1838.—Ib. Conspectus, 1850, 222.—Sw. F. B. Am. III, 831, 318.—Aud. Orn. Biog. IV, 1838, 430; pl. 360.—Ib. Syn. 1839, 76.—Ib. Birds, Am. II, 1841, 128; pl. 121.—Baird, Gen. Rep. Birds, p. 369.

Troglodytes europaeus, Bon. Obs. Wils. 1825; No. 137.—Nuttall, Man. 1, 1832, 427.

Sp. Ch.—Bill very straight, slender, and conical; shorter than the head. Tail considerably shorter than the wings, which reach to its middle. Upper parts reddish brown, becoming brighter to the rump and tail; everywhere, except on the head and upper part of the back, with transverse bars of dusky and of lighter. Scapulars and wing coverts with spots of white. Beneath pale reddish brown, barred on the posterior half of the body with dusky and whitish, and spotted with

white more anteriorly; outer web of primaries similarly spotted with pale brownish white. An indistinct pale line over the eye. Length, about 4. 50 inches; extent, 5. 25; wing, 1. 66; tail, 1. 26. Iris, brown; feet, brownish yellow.

Hab.—North America generally.

The winter wren is probably the most common species in the forests of the Territory, and frequents even the densest parts of them, where its lively song is almost the only sound to be heard. It is most commonly seen in winter as it retires in summer to the mountains to breed. I observed young birds on the Coast mountains in July, but have never seen its nest.—C.

The little winter wren is found at Fort Steilacoom more abundantly in winter than any other species. It is very unsuspicious, allowing a near approach. A specimen obtained near Fort Steilacoom, in January, 1854, was shot in a dense fir forest, where, among fallen logs, &c., it made its home. I have frequently seen birds of this species in similar situations during the long, dreary, damp, Oregon winter, and fancy that they are in the habit of retiring to these solitudes to await the coming of the bright days of spring, when they emerge, and, in company with the T. Bewickii, are frequently found among the more open thickets. *Individuals* are, however, found throughout winter in the more open situations.

The species *parkmanni & hyemalis* are certainly much alike in habits, affecting the same situation, and having much the same general characteristics.

A bird of this species, apparently in good condition, killed in December, 1853, at Fort Steilacoom, weighed exactly two drachms.—S.

Family CERTHIADAE.—The Creepers.

CERTHIA AMERICANA, Bonap.

American Creeper.

Certhia americana, Bonap. Consp. List, 1838.—Reich. Handb. I, 1851, 265; pl. dcxv, fig. 4102, 3.—Baird, Gen. Rep. Birds, p. 372.

Certhia familiaris, Vieillot, Ois. Am. Sept. II. 1807, 70.—Wilson, Am. Orn. I, 1808, 122; pl. viii.—Aud. Orn. Biog. V, 1839, 158; pl. 415.—Ib. Syn. 1839, 73.—Ib. Birds Amer. II, 1841, 109; pl. 115.

? Certhia mexicana, "Gloger, Handbuch," Reichenbach, Handbuch Spec. Orn. I, 1851, 265; pl. dlxii, fig. 3841, 2.—Ib. Sclater, Pr. Zool. Soc. 1856, 290.

Sp. Ch.—Bill about the length of the head. Above dark brown, with a slightly rufous shade, each feather streaked centrally but not abruptly with whitish; rump rusty. Beneath almost silky white; the under tail coverts with a faint rusty tinge. A white streak over the eye; the ear coverts streaked with whitish. Tail feathers brown centrally, the edges paler yellowish brown. Wings with a transverse bar of pale reddish white across both webs.

Length, 5. 50; wing, 2. 60; tail, 2. 90. (No. 827.)

Hab.—North America generally.

The brown creeper is abundant in the forests, but difficult to see from its similarity in color to the bark along which it creeps. It appears to reside constantly in the Territory.—C.

I have obtained several specimens of the American creeper in the oak groves in the vicinity of Fort Steilacoom. In habits the Oregon bird resembles that of the Atlantic States.—S.

SITTA CANADENSIS, Linn.

Red-bellied Nuthatch.

Sitta canadensis, Linn. Syst. Nat. I, 1766, 177.—Nuttall, Man. I, 1832, 583.—Aud. Orn. Biog. II, 1834, 24; V, 474; pl. 108.—Ib. Birds Amer. IV, 179; pl. 248.—Bon. Consp. 1850, 227.—Baird, Gen. Rep. Birds, p. 376.

Sitta varia, WILS. Am. Orn. I, 1808, 40; pl. ii.

Sitta stulta, VIEILL. Nouv. Dict. (?)

SP. CH.—Above ashy blue. Top of head black; a white line above and a black one through the eye. Chin white; rest of under parts brownish rusty. Lower mandible pale brown color, its tip black; upper mandible black. Feet and legs dusky greenish yellow. Length about 4. 80 inches; extent, 8. 25 to 9. 50; wing, 2. 60.

Hab.—North America to the Rocky mountains. Probably also to the Pacific.

The Canada nuthatch is common in the Territory, preferring the oaks and other deciduous trees, and never frequenting the interior of the dense forests. I observed this and the next species at 49°, east of the Cascade mountains, as late as October 15.—C.

A nuthatch, apparently of this species, I found rather abundant west of the Cascade mountains in Washington Territory, but not quite so abundant as the other species. Habits similar to those of *S. canadensis* in the eastern States.—S.

SITTA ACULEATA, Cassin.

Slender-bill Nuthatch.

Sitta aculeata, CASSIN, Pr. A. N. Sc. Phila. VIII, Oct. 1856, 254.—BAIRD, Gen. Rep. Birds, p. 375

SP. CH.—Above ashy blue. Top of head and neck black. Under parts and sides of head to a short distance above the eye white. Under tail coverts and tibial feathers brown; concealed primaries white. Precisely similar to *S. carolinensis*, but the bill slenderer and more attenuated.

Length, 5. 75 to 6 inches; extent, 9. 80 to 10. 50; wing, about $3\frac{3}{4}$.

Hab.—Pacific coast, and east towards the Rocky mountains.

The slender-billed nuthatch is common in similar places with the preceding, and has the same habits.—C.

This bird is quite abundant at Puget Sound. It prefers searching for insects on deciduous trees rather than on the conifera.—S.

SITTA PYGMAEA, Vigors.

California Nuthatch.

Sitta pygmaea, VIGORS, Zool. Beechey's Voyage, 1839, 25; pl. iv.—AUDUBON, Orn. Biog. V, 1839, 68; pl. 415.—IB. Syn. 1839, 168.—IB. Birds Amer. IV, 1842, 184; pl. 250.—NEWBERRY, Zool. Cal. Or. Route; P. R. R. Rep. VI, iv, 1857, 79.—BAIRD, Gen. Rep. Birds, p. 378..

SP. CH.—Above ashy blue; head and upper part of neck greenish ashy brown, its lower border passing a little below the eye, where it is darker; nape with an obscure whitish spot. Chin and throat whitish; rest of the lower parts brownish white; the sides and behind like the back, but paler. Middle tail feather like the back; its basal half with a long white spot; its outer web edged with black at the base. Length about 4 inches; wing, 2. 40.

Hab.—Pacific coast and towards Rocky mountains.

I met with the California nuthatch only in the open pine forests at Fort Colville, near the 49th degree, associated in small flocks, on the 20th October, when there were heavy frosts at night. They were actively hunting among the high branches, making a chirping noise like young chickens, and following each other from tree to tree. In habits they much resemble the *Parus minimus*.

This bird, like many other California species, probably migrates only along the east side of the mountains, shunning the damp spruce forests near the coast.—C.

Family PARIDAE.—The Titmice.

PARUS OCCIDENTALIS, Baird.

Western Titmouse.

Parus occidentalis, Baird, Gen. Rep. p. 391.

Sp. Ch.—Tarsi lengthened. Tail graduated; outer feather about .25 of an inch shorter than the middle.

Above dark brownish ash; head and neck above and below black, separated on the sides by white; beneath light dirty, rusty yellowish brown, scarcely whiter along the middle of body. Tail and wings not quite so much edged with whitish as in *P. atricapillus*.

Length, 4.75 to 5.12; extent, 7.60; wing, 2.40; tail, 2.40. Iris brown, bill black, feet gray.

Hab.—North Pacific coast of United States.

The common black-capped chickadee, so abundant in the eastern States, is in this Territory represented by the western titmouse, frequenting the low thickets and trees, where it is always busily employed seeking food. I observed its nests near Puget Sound, burrowed in soft rotten wood.—C.

Quite abundant in the valley of the Willamette, also at Fort Vancouver during winter. In habits it resembles closely the black-capped chickadee of the Atlantic States.—S.

PARUS MONTANUS, Gambel.

Mountain Tit.

Parus montanus, Gambel, Pr. A. N. Sc. 1, April, 1843, 259, (Santa Fé.)—Cassin, Illust. 1, 1853, 18.—Baird, Gen. Rep. Birds, p. 394.

Sp. Ch.—Head and neck above, with under part of head and throat glossy black; forehead, line above the eye and one below it, involving the auriculars, white. These stripes, embracing between them a black line through the eye and confluent with the black of the head. Above ashy; beneath similar, but paler; the upper part of breast and middle line of belly white.

Length about 5 inches; wing, 2.60; tail, 2.40.

Hab.—Pacific coast of United States, probably to the Rocky mountains; Fort Dalles, Oregon.

I obtained one of these birds at Fort Dalles, in February, 1854. It must be very rare in that vicinity, as I never succeeded in getting another.—S.

PARUS RUFESCENS, Towns.

Chestnut-backed Tit.

Parus rufescens, Townsend, J. A. N. Sc. Phil. VII, II, 1837, 190.—Audubon, Orn. Biog. IV, 1838, 371; pl. 353.—Ib. Birds Am. II, 1841, 158; pl. 129.—Cassin, Illust. 1853, 18.—Baird, Gen. Rep. Birds, p. 394.

Poecila rufescens, Bon. Consp. 1850, 230.

Sp. Ch.—Whole head and neck above, and throat from bill to upper part of breast, sooty blackish brown. Sides of head and neck, upper part of breast, and middle of body, white; back and sides dark brownish chestnut. Length, 4.75 to 5 inches; extent, 6.50 to 7.75; wing, 2.36; tail, 2.16.

Hab.—Pacific coast of the United States.

The rufous chickadee is the most abundant species in the forests of this Territory. It appears to prefer the dense evergreens, where large parties of them may be found at all seasons, busily seeking food among the leaves and branches, ascending even to the highest summits.

They are generally in company with the ruby-crowned wren, and sometimes with the other species of titmice. In April they burrow out a hole in the side of a soft rotten trunk, a few feet from the ground. The eggs I have never seen. During the spring they are generally seen in pairs, but as soon as the broods can fly, about June, they appear in small families.

They, at all seasons, sing their faint, lisping notes, repeated thrice, like those of the Blackcap. I noticed a single pair of this species in California, in November, 1855. In the evergreen forests these birds are doubtless abundant.—C.

Abundant at Fort Steilacoom, Washington Territory, where it is a constant summer resident They are an unwary unsuspicious bird, allowing near approach, especially while busily engaged in feeding. Their habits in feeding resemble those of the other species of this genus, clinging head down to limbs, and searching every crack or cranny in the bark for their insect food.—S.

PSALTRIPARUS MINIMUS, Bonap.

Least Tit.

Parus minimus, Townsend, Jour. A. N. Sc. Phila. VII, II, 1837, 190.—Aud. Orn. Biog. IV, 1838, 382 ; pl. 353, fig. 5, 6.—Ib. Birds Amer. II, 1841, 160; pl. 130.

Poecila minima, Bonap. Conspectus, 1850, 230.

Psaltria minima, Cassin, Illust. I, 1853, 20.

Psaltriparus minimus, Bonap. Comptes Rendus, XXVIII, 1854; Notes Orn. Delattre, 45.—Baird, Gen. Rep. Birds, p. 397.

Sp. Ch.—Tail long, feathers graduated. Above rather dark olivaceous cinereous; top and sides of head smoky brown. Beneath, pale whitish brown, darker on the sides Length, 4 to 4.38; extent, 5.75; wing, 1.90; tail, 2.25.

Hab.—Pacific coast of United States.

This diminutive titmouse is quite abundant during summer at Fort Steilacoom. I could detect scarcely any difference in their habits from those of other species of the genus. They arrive at Fort Steilacoom towards the middle of April. I have never seen one in Oregon or Washington Territory during winter, and presume that they migrate to the south every autumn. *P. rufescens* and *P. atricapillus*, on the contrary, can always be found throughout the winter in greater or less numbers.—S.

The least chickadee, obtained by Townsend on the Columbia river, I have never seen *north* of it. I saw it in great abundance in California.—C.

Family ALAUDIDAE.—The Larks.

EREMOPHILA CORNUTA, Boie.

Sky Lark; Shore Lark.

Eastern and Northern variety.

Alauda cornuta, Wilson, Am. Orn. I, 1808, 85, (in text.)—Rich. F. Bor. Am. II.—Maxim. Reise Nord. Am. I, 1839, 367.

Eremophila cornuta, Boie, Isis, 1828, 322.—Baird, Gen. Rep. Birds, p. 403.

Phileremos cornutus, Bonap. List, 1838.

Otocoris cornutus, of authors.

Alauda alpestris, Forster, Phil. Trans. LXII, 1772, 383.—Wilson, Am. Orn. I, 1808, 85; pl. v, f. 4.—Bon. Obs. 1825, No. 130.—Nuttall, Man. I, 1832, 455.—Aud. Orn. Biog. II, 1834, 570; V. 448; pl. 200.—Ib. Syn. 1839, 97.—Ib. Birds Amer. III, 1841, 44; pl. 151.—Jardine, Br. Birds, II, 329, (Am. sp.)

Western and Southern variety.

Alauda chrysolaema, Wagler, Isis, 1831, 350.—Bp. Pr. Zool. Soc. 1837, 111.

Alauda minor, Giraud, 16 sp. Texas Birds, 1841.

Alauda rufa, Aud. Birds Amer. VII, 1843, 353; pl. 497.

Otocoris occidentalis, M'Call, Pr. A. N. S. Phil. V, June, 1851, 218, Santa Fé.—Baird, Stansbury's Report, 1852, 318

Sp. Ch.—Above pinkish brown, the feathers of the back streaked with dusky. A broad band across the crown, extending backwards along the lateral tufts; a crescentic patch from the bill below the eye and along the side of the head; a jugular crescent, and the tail feathers, black; the innermost of the latter like the back. A frontal band extending backwards over the eye, and under parts, with outer edge of wings and tail white. Chin and throat yellow.

Length of Pennsylvania specimens, 7.75; wing, 4.50; tail, 3.25; bill above, .52.

Var. *chrysolaema*, smaller and lighter colored. Length 6.50 to 7.25; extent 11.50 to 12.25; iris brown, bill black, bluish below, feet black.

Hab.—Everywhere on the prairies and desert plains of North America. Atlantic States in winter.

The shore or "horned" lark is abundant on the prairies of the interior, but I have only seen one on the coast border. They seem to be permanent residents in ordinary seasons, and are more gregarious and common in winter. I once met with one on a gravelly plain near Olympia, scratching out a hollow under a tussock of grass, for its nest, as late as the 1st of July.—C.

A very abundant summer resident on the gravelly prairies near Fort Steilacoom. It is a tame, unsuspicious bird, allowing man's approach to within a few feet of it. It is essentially a ground bird, rarely alighting on bushes or shrubs.—S.

Family FRINGILLIDAE.—The Finches.

Sub-Family COCCOTHRAUSTINAE. Wood Finches.

HESPERIPHONA VESPERTINA, Bonap.

Evening Grosbeak.

Fringilla vespertina, Cooper, Annals New York Lyceum, N. H. I, II, 1825, 220. (Sault St. Marie.)—Aud. Orn. Biog. IV, 1838, 515: V, 235; pl. 373, 424.

Fringilla (Coccothraustes) vespertina, Bon. Syn. 1828, 113.—Ib. Zool. Jour. IV, 1828, 2.—Ib. Am. Orn. II; pl. xv.

Coccothraustes vespertina, Sw. F. Bor. Am. II, 1831, 269.—Aud. Syn. 134.—Ib. Birds Amer. III, 1841, 217; pl. 207.

Hesperiphona vespertina, Bon. Comptes Rendus, XXXI, Sept. 1850, 424.—Ib. Conspectus, 1850, 505.—Baird, Gen. Rep. Birds, p. 409.

Coccothraustes bonapartii, Lesson, Illust. de Zool. 1834; pl. xxxiv.

Sp. Ch.—Bill yellowish green, dusky at the base. Anterior half of the body dark yellowish olive, shading into yellow to the rump above, and the under tail coverts below. Outer scapulars, a broad frontal band continued on each side over the eye, axillaries, and middle of under wing coverts, yellow. Feathers along the extreme base of the bill, the crown, tibiae, wings, upper tail coverts, and tail, black; inner greater wing coverts and tertiaries white. Length, 7.50; extent, 13; wing, 4.30; tail, 2.75. Iris brown, legs pale brown. Female a little smaller.

Hab.—Pacific coast to Rocky mountains; northern America east to Lake Superior.

The evening grosbeak is a common resident in the forests, but as it frequents the summits of the tallest trees, its habits are difficult to observe. In January, 1854, during a snow storm, a flock descended to some low bushes at Vancouver, and began to eat the seeds. I obtained four of them. Since then I have only seen this bird flying high, among the poplars chiefly, on the seeds of which they feed, uttering their loud, shrill call-note. I have heard, in early morning, a few loud, clear whisted notes, which I supposed to be made by this bird.—C.

CARPODACUS CALIFORNICUS, Baird.

Western Purple Finch.

Baird, Gen. Rep. Birds, p. 413.

Third quill longest; first shorter than the fourth. Purple of head and rump much darker than in *C. purpureus;* the head, with a broad supra-orbital lateral band, lighter purple. Body crimson, palest on the rump and breast, darkest across the

middle of back and wing coverts, where the feathers have dusky centres. The red extends below continuously to the lower part of the breast, and in spots to the tibiae. The belly and under tail coverts white, streaked faintly with brown, except in the very middle. Edges of wings and tail feathers brownish red; lesser coverts like the back. Two reddish bands across the wings, (over the ends of the middle and greater coverts.) Lores dull grayish.

Female olivaceous brown; brighter on the rump. Beneath white. All the feathers everywhere streaked with brown, except on the middle of the belly and under coverts a superciliary light stripe. Length, 6. 25; extent, 9. 50 to 10; wing, 3. 20. Iris brown, bill horn color, feet blackish brown.

Hab.—Pacific coast of United States.

The western purple finch is abundant, especially along the banks of rivers in the interior. A few remain all the year in the Territory, but the majority of them probably migrate south. I observed the first arrival of a large flock at the Straits of De Fuca in April, when they fed on the still unripe seeds of a species of cress. I found everywhere a larger proportion of brown birds than purple. I found no nests, but saw newly fledged young in June, which were of the brownish color. The song of this species is very fine; loud and varied, resembling that of several other singing birds so much that it might be supposed they were imitated.—C.

Very common at Fort Steilacoom during the summer.—S.

CHRYSOMITRIS TRISTIS, Bon.

Yellow Bird; Thistle Bird.

Fringilla tristis, Linn. Syst. Nat. I, 1766, 320.—Gm. I, 907.—Wils. Am. Orn. I, 1808, 20; pl. i, f. 2.—Aud. Orn. Biog. I, 1831, 172: V, 510; pl. 33.

Carduelis tristis, Bon. Obs. Wils. 1825, No. 96.—Aud. Syn. 1839, 116.—Ib. Birds Amer. II, 1841, 129; pl. 181.

Chrysomitris tristis, Bon. List, 1838.—Ib. Conspectus, 1850, 517.—Newberry, Zool. Cal. & Or. Route; Rep. P. R. R. Surv. VII, iv, 1857, 87.—Baird, Gen. Rep. Birds, p. 421.

Carduelis americana, (Edwards,) Sw. & Rich. F. B. A. II, 1831, 268.

Sp. Ch.—Bright gamboge yellow; crown, wings, and tail black. Lesser wing coverts, band across the end of greater ones, ends of secondaries and tertiaries, inner margins of tail feathers, upper and under tail coverts, and tibia, white. Length, 5 inches; extent, 8.75; wing, 3. Iris brown, bill black, legs pale flesh color.

Hab.—North America generally.

The common yellow bird of the eastern States is abundant on the Columbia and along the sea-coast near its mouth, but I have never seen them about Puget Sound.—C.

I have looked very carefully for this species about Steilacoom, Puget Sound, in the most appropriate situations, such as large thistle patches, &c., but in vain. It *may* exist there, but I doubt it.—S.

CHRYSOMITRIS PINUS, Bonap.

Pine Finch.

Fringilla pinus, Wilson, Am. Orn. II, 1810, 133; pl. xvii, f. 1.—Aud. Orn. Biog. II, 1834, 455: V, 509; pl. 180.

Fringilla (Carduelis) pinus, Bon. Obs. Wils. 1825, No. 103.

Linaria pinus, Aud. Synopsis, 1839, 115.—Ib. Birds Amer. III, 1841, 125; pl. 180.

Chrysomitris pinus, Bonap. Consp. 1855, 515.—Baird, Gen. Rep. Birds, p. 425.

Sp. Ch.—Tail deeply forked. Above brownish olive. Beneath whitish, every feather streaked distinctly with dusky. Concealed bases of tail feathers and quills, together with their inner edges, sulphur yellow. Outer edges of quills and tail feathers yellowish green. Two brownish white bands on the wing. Length, 5.50; extent, 8.50; wing, 3.00; tail, 2.20. Iris brown, bill and feet grayish brown.

Hab.—North America from Atlantic to Pacific.

The pine finch is an abundant and constant resident in the Territory, migrating only to the

coast in winter, when it feeds chiefly on the seeds of alder. In summer they are still somewhat gregarious, though occupied with their nests and young. The only difference I observed in summer plumage was a brighter hue of the yellow bars on the wings. It closely resembles the yellow bird in habits and notes, but differs in the choice of its food, preferring the seeds of trees to the low plants on which the other feeds.—C.

CURVIROSTRA AMERICANA, Wilson.

Red Crossbill.

Curvirostra americana, Wils. Am. Orn. IV, 1811, 44; pl. xxxi, f. 1, 2.—Baird, Gen. Rep. Birds, p. 426.
Loxia americana, Bon. List, 1838.—Ib. Conspectus, 1850, 527.—Bon. & Schlegel, Mon. Loxiens, 5, tab. vi.—Newberry, Zool. California and Oregon Route, P. R. R. Rep. VI, iv, 1857, 87.
Loxia curvirostra, Forster, Phil. Trans. LXII, 1772, No. 23.—Aud. Biog. II, 1834, 559: V, 511; pl. 197.—Ib. Birds Amer. III, 1841, 186; pl. 200.

Sp. Ch.—Male dull red; darkest across the back; wings and tail dark blackish brown.

Female dull greenish olive above, each feather with a dusky centre; rump and crown bright greenish yellow. Beneath grayish; tinged, especially on the sides of the body, with greenish yellow. Young entirely brown, paler beneath.

Male about six inches; extent, 10.50; wing, 3.30; tail, 2.25. Iris, bill, and feet, dark brown.

Hab.—North America generally, coming southward in winter. Resident in the mountains of Pennsylvania.

The crossbill is abundant near the coast, where it feeds in winter on the seeds of the black spruce. In summer it appears to retire to the high mountains to breed, but returns about September. The color of the males so closely resembles that of the young spruce cones that it is hard to distinguish them on a tree. There is, as in the last species, always a larger number of brown birds. I have not observed this bird in the forests of the fir, east of the Coast range. It seems to prefer those cones that are easy to break open.—C.

This bird, in certain seasons, is quite abundant at Puget Sound. This was the case in the spring of 1854. Since that time I have obtained but one specimen. I noticed in 1854, about my door at Fort Steilacoom, a pair on the ground near a pool of rain water; they appeared very tame, and allowed me to approach within a few feet.—S.

AEGIOTHUS LINARIA, Cabanis.

Lesser Red Poll.

Fringilla linaria, Linn. Syst. Nat. I, 1766, 322.—Aud. Orn. Biog. IV, 1838, 538; pl. 375.
Acanthis linaria, Bp. Conspectus, 1850, 541.
Aegiothus linaria, Cabanis, Mus. Hein. 1851, 161.—Baird, Gen. Rep. Birds, p. 428.
Linaria minor, Sw. F. Bor. Am. II, 1831, 267.—Aud. Syn. 1839, 114.—Ib. Birds Amer. III, 1841, 122; pl. 179.

Sp. Ch.—Above light yellowish, each feather streaked with dark brown. Crown dark crimson. Upper part of breast and sides of the body tinged with a lighter tint of the same; the rump and under tail coverts also similar, but still less vivid, and with dusky streaks. Rest of under parts white, streaked on the sides with brown. Loral region and chin dusky; cheeks, (brightest over the eye,) and a narrow front, whitish. Wing feathers edged externally, and tail feathers all round with white. Two yellowish white bands across the wing coverts; secondaries and tertiaries edged broadly with the same. Bill yellowish, tinged with brown on the culmen and gonys; the basal bristles brown, reaching over half the bill. Length, 5.25; extent, 9; wing, 3.10; tail, 2 70. Iris brown, bill yellow, feet black.

Hab.—Throughout eastern North America, coming south in winter. Washington Territory.—Cooper.

The lesser linnet I never saw but once, when a small flock appeared on the coast in winter. I obtained one specimen, which was unluckily destroyed afterwards. It seemed to have much the same habits as the pine finch, and fed on alder and thistle seeds.—C.

Sub-Family SPIZELLINAE. The Field Sparrows.

PASSERCULUS SANDWICHENSIS, Baird.

Large Savannah Sparrow.

Emberiza sandwichensis, Gm. I, 1788, 875.

Emberiza arctica, Latham, Ind. Orn. I, 1790, 414.

Fringilla arctica, Vigors, Zool. of Blossom, 1839, 20, (perhaps one of the smaller species.)—"Brandt. Icon. Ross. 2, 6."

Euspiza arctica, Bp. Conspectus, 1854, 60.

Emberiza chrysops, Pallas, Zoog. Rosso-As. II, 1811, 45; tab. xlviii; fig. 1, (Unalaschka.)

Passerculus sandwichensis, Baird, Gen. Rep. Birds, p. 444.

Sp. Ch.—Feathers of the upper parts generally with a central streak of blackish brown; the streaks of the back with a slight rufous suffusion laterally; the feathers edged with gray, which is lightest on the scapulars. Crown with a broad median stripe of yellowish gray. A superciliary streak from the bill to the back of the head, eyelids, and edge of the elbow, yellow. A yellowish white maxillary stripe curving behind the ear coverts, and margined above and below by brown. The lower margin is a series of thickly crowded spots on the side of the throat, which are also found on the sides of the neck, across the upper part of the breast, and on the sides of the body. A few spots on the throat and chin. Rest of under parts white. Outer tail feathers and primary edged with white. Almost exactly like *P. savanna*, but half an inch larger, with much larger bill. Length, 6.12 inches; extent, 9.38; wing, 3 00; tail, 2 55. Iris brown, upper mandible dusky; lower, pale.

Hab.—Northwestern coast from the Columbia river to Russian America.

This sparrow seems to be only a passenger through the Territory, migrating northward in the end of April in pairs, and not returning until the end of September, when in flocks they frequent the shores and prairies along the sea-coast. Their plumage seems to be the same at all seasons, and I have never heard them utter any note but a chirp.—C.

Rather abundant as a spring visitor at Fort Steilacoom.

No. 308. April 17, 1856. Fort Steilacoom. Yellow band over the eyes distinct. Middle line on top of head well marked. Iris dark brown. Upper mandible dusky, lower pale. Measured $6\frac{1}{8}$, $9\frac{3}{8}$.—S.

PASSERCULUS ALAUDINUS, Bonap.

Gray Savannah Sparrow.

Passerculus alaudinus, Bp. Comptes Rendus, XXXVII, Dec. 1853, 918, California.—Ib. Notes Ornithologiques Delattre, 1854, 18. (Reprint of preceding)—Baird, Gen. Rep. Birds, p. 446.

Sp. Ch.—Similar to *P. savanna*, but smaller; the bill rather slenderer and elongated. Little of yellow in the superciliary stripe, (most distinct anteriorly;) the rest of the head without any tinge of the same. General color much paler and grayer than in *P. savanna*. Breast with only a few spots. Length, 5. 25 to 5. 50; extent, 8. 50; wing, 2. 75; tail, 2. 30.

Hab.—Coast of California and Lower Rio Grande of Texas and Mexico.

This meadow sparrow, so closely resembling the preceding in general appearance, frequents the same low meadows and prairies along the coast. I have never seen it in the interior. They arrived at the Straits of De Fuca in March and remained until late in October. They are always among the grass, and rarely leave it except to sing their faint and lisping trill from a low weed or bush. When fresh the iris is brown, the bill and feet brownish flesh-color.—C.

Note.—A finch strongly resembling the *Passerculus alaudinus*, Bonap., was obtained by me at Fort Steilacoom, July 18, 1856. It measured in length 5.75 inches; extent, 8.75. Bill purplish dusky; legs and feet flesh-colored and rather stout. It did not agree with any descrip-

tion to which I had access, and as the bird was lost before reaching Washington city, its precise position is undetermined. I find, however, on examining the birds in the Smithsonian collection, that it more nearly resembled the above named species than any other. Its description, as written in my note-book, is as follows: "A faint buff-yellow median line, from the base of bill to occiput. Head, throat, neck, back, and fore part of breast, yellow buff; paler beneath, and with a faint tinge of ferruginous above; coarsely streaked on the top of head, finely on neck, throat, and breast, widely on the back, with central lines and spots of dusky. Two bars of yellowish white on the wings, formed by the tips of the coverts. First primary edged with whitish, secondaries edged with chestnut. Tail feathers pointed and dusky, their margins faintly ferruginous. Breast posteriorly, belly, and lower tail coverts, white, tinged with yellowish."—S.

POOCÆTES GRAMINEUS, Baird.

Grass Finch; Bay-winged Bunting.

Fringilla graminea, Gm., Syst. Nat. I, 1788, 922.—Aud. Orn. Biog. I, 1831, 473: V. 502; pl. 90.
Emberiza graminea, Wilson, Am. Orn. IV, 1811, 51; pl. xxxi, f. 5.—Aud. Syn. 1839, 102.—Ib. Birds Amer. III, 1841, 65; pl. 159.
Fringilla (Zonotrichia) graminea, Swainson, F. B. Am. II, 1831, 254.
Zonotrichia graminea, Bon. List, 1838.—Ib. Conspectus, 1850, 478.
Poocætes gramineus, Baird, Gen. Rep. Birds, p. 447.

Sp. Ch.—Tail feathers rather acute. Above light yellowish brown; the feathers everywhere streaked abruptly with dark brown, even on the sides of the neck, which are paler. Beneath, yellowish white; on the breast and sides of neck and body streaked with brown. A faint light superciliary and maxillary stripe; the latter margined above and below with dark brown; the upper stripe continued around the ear coverts, which are darker than the brown color elsewhere. Wings, with the shoulder, light chestnut brown, and with two dull whitish bands along the ends of the coverts; the outer edge of the secondaries also is white. Outer tail feather and edge and tip of the second white. Length, about 6.12 to 6.75; extent, 9.50; wing, 3.10. Iris, bill, and feet brown.

Hab.—United States from Atlantic to the Pacific; or else one species to the high central plains, and another from this to the Pacific.

The bay-winged sparrow is common in summer on the prairies of the interior, arriving in April at Puget Sound, together with other species.—C.

Rather abundant on the Nisqually plains, Puget Sound.—S.

CHONDESTES GRAMMACA, Bonap.

Lark Finch.

Fringilla grammaca, Say, in Long's Exped. R. Mts. I, 1823, 139.—Bon. Am. Orn. I, 1825, 47; pl. v, f. 3.—Aud. Orn. Biog. V, 1839, 17; pl. 390.
Chondestes grammaca, Bon. List, 1838.—Ib. Conspectus, 1850, 479.—Baird, Gen. Rep. Birds, p. 456.
Emberiza grammaca, Aud. Synopsis, 1839, 101.—Ib. Birds Amer. III, 1841, 63; pl. 158.
Chondestes strigatus, Swainson, Philos. Mag. I, 1827, 435.

Sp. Ch.—Hood chestnut, tinged with black towards the forehead, and with a median stripe and superciliary stripe of dirty whitish. Rest of upper parts pale grayish brown, the interscapular region streaked with dark brown. Beneath white, a round spot on the upper part of the breast. A maxillary stripe and a short line from the bill to the eye, continued faintly behind it, black. A white crescent under the eye, bordered below by black and behind by chestnut. Tail feathers dark brown, tipped broadly with white. Length, 6 to 7.12 inches; extent, 9.75 to 11.25; wing, 2.75 to 3.75.

Hab.—From Wisconsin and the prairies of Illinois (also in Michigan?) to the Pacific coast; south to Texas and Mexico.

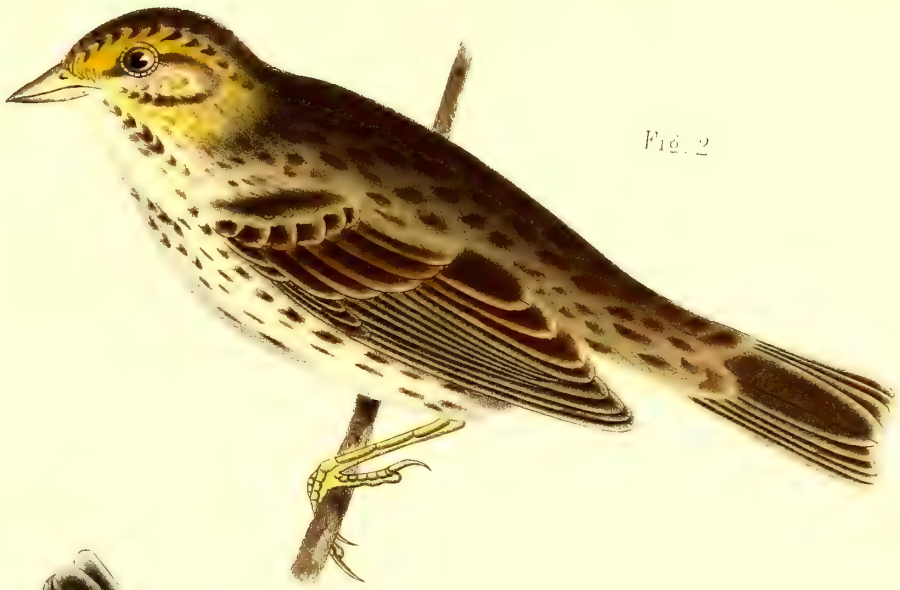


Fig. 2

Fig. 1.

Bowen & Cº Lith. & Col. Philada

1. JUNCO DORSALIS. 2. PASSERCULUS SANDWICHENSIS.

One specimen of the lark finch was obtained by me at Fort Dalles, O. T. Not seen by me west of the Cascade mountains. Townsend gives it as an inhabitant of Oregon. The bird above-mentioned is now in the Smithsonian collection, numbered 4393. The measurements of this (a female) were somewhat above the average. Length, 6.75; extent, 10.87; wing, 3.50. Bill pale bluish, tip dusky. Irides brown.—S.

ZONOTRICHIA GAMBELII, Gambel.

Western White-crowned Sparrow.

Fringilla gambelii, Nutt. Man. (I, 2d. ed.) 1840, 556.—Gambel, Pr. A. N. Sc. Phila. I, 1843, 262. (California.)
Zonotrichia gambelii, Gambel, J. A. N. Sc. 2d series, I, Dec. 1847, 50.—Baird, Gen. Rep. Birds, p. 460.
Zonotrichia leucophrys, Newberry, Zool. Cal. & Or. Route : Rep. P. R. R. VII, iv, 1857, 87.

Sp. Ch.—Head above and a narrow line through and behind the eye to the occiput black ; a longitudinal patch in the middle of the crown, and a short line from above the anterior corner of the eye, the two confluent on the occiput, white. Sides of the head, fore part of breast, and lower neck all round, pale ash, lightest beneath and shading insensibly into the whitish of the belly and chin ; sides of belly and under tail coverts tinged with yellowish brown. Interscapular region streaked broadly with dark chestnut brownish. Edges of the tertiaries brownish chestnut. Two white bands on the wing. The lores are gray throughout, this color continuous with a white superciliary stripe along the side of the head.

Female similar, but smaller ; immature male with the black of the head replaced by dark chestnut brown, the white tinged with brownish yellow. Length, 6. 50 to 7. 25 ; extent, 9. 38 to 10. 75. Iris brown ; bill yellow, tipped with brown ; feet pale yellowish brown.

The western white-crowned sparrow is very abundant in all the prairie districts, especially where there are low bushes, and, unlike most of the sparrows, frequents the coast prairies, where I have found its nest and eggs. They arrived at the Straits of De Fuca about the end of March in large numbers. In October they retire southward, and I found them with the preceding and other species very common in fall in California.—C.

This bird is very abundant both at Fort Dalles and at Puget Sound, and is a constant summer resident at both places. It is a very fat species at all seasons, so much so that skinning is difficult to perform neatly.

It makes its nest in low bushes and among the stalks of lupins and other shrub-like weeds, generally preferring dry situations on prairies in places where a short flight will enable it to take shelter in thickets. A specimen (No. 158) obtained by me at Fort Dalles, I find described in my note book as having "the bill reddish yellow, its tip dusky; legs dingy reddish yellow; the feet of the same color, only more dusky."—S.

ZONOTRICHIA CORONATA, Baird.

Golden-crowned Sparrow.

Emberiza coronata, Pallas, Zoog. Rosso-Asiat. II, 1811, 44 ; plate.
Emberiza atricapilla, Aud. Orn. Biog. V, 1839, 47 ; pl. 394 ; (not of Gmelin.)
Fringilla atricapilla, Aud. Synopsis, 1839, 122.—Ib. Birds Amer. III, 1841, 162 ; pl. 193.
Fringilla aurocapilla, Nuttall, Man. I, (2d ed.) 1840, 555.
Zonotrichia aurocapilla, Bon. Consp. 1850, 478.—Newberry, Zool. Cal. & Or. Route ; Rep. P. R. R. VI, iv, 1857, 88.
Emberiza atricapilla, Gm. I, 1788, 875, in part only.—Lath. Ind. 415.
Black-crowned Bunting, Pennant, Arc. Zool. II, 364.—Lath. II, i, 202, 49 ; tab. lv.
Zonotrichia coronata, Baird, Gen. Rep. Birds, p. 461.

Sp. Ch.—Head, from bill to upper part of nape, pure black, the middle longitudinal third occupied by yellow on the anterior half, and pale ash on the posterior. Sides and under parts of head and neck, with upper part of breast, ash color, passing insensibly into whitish on the middle of the body ; sides and under tail coverts tinged with brownish. A yellowish spot above the eye, bounded anteriorly by a short black line from the eye to the black of the forehead ; this yellow spot, how-

ever, reduced to a few feathers in spring dress. Interscapular region, with the feathers, streaked with dark brown, suffused with dark rufous externally. Two narrow white bands on the wings.

Length, about 7 to 7.50 inches; extent, 9.75 to 10.12; wing, 3.30.

Hab.—Pacific coast from Russian America to southern California; Black Hills of Rocky Mountains.?

The large and handsome golden-crowned sparrow seems to be only a straggler in the forest regions west of the Cascade mountains, and, like other California birds, probably migrates more abundantly to the open plains eastward of them. I saw them but once near Puget Sound on the 10th of May, when they were probably migrating. Though I looked for them carefully during two months after that, I could find no more.—C.

This species resembles much, in habit and size, the last. It is also generally very fat—*too fat*, frequently, for skinning nicely. Audubon, in his Synopsis, says that the species is *rare*. This is not the case either in the vicinity of Fort Dalles or Fort Steilacoom, in both of which places it is in summer quite abundant.

The measurements of two specimens obtained by me at Fort Steilacoom are much larger than those given in Audubon's Synopsis. Another specimen, (No. 90,) killed in May, 1854, at Fort Steilacoom, measured 10.50 in extent, and weighed exactly one ounce.—S.

JUNCO OREGONUS, Sclater.

Oregon Snow Bird.

Fringilla oregona, Townsend, J. A. N. Sc. VII, 1837, 188.—Ib. Narrative, 1839, 345.—Audubon, Orn. Biog. V, 1839, 68; pl. 398.

Struthus oregonus, Bon. List, 1838.—Ib. Consp. 1850, 475.—Newberry, Zool. Cal. & Or. Route; Rep. P. R. R. IV, iv, 1857, 88.

Niphoea oregona, Audubon, Synopsis, 1839, 107.—Ib. Birds Amer. III, 1841, 91; pl. 168.—Cab. Mus. Hein. 1851, 134.

Junco oregonus, Sclater, Pr. Zool. Soc. 1857, 7.—Baird, Gen. Rep. Birds, 466.

Fringilla hudsonia, Licht. Beit. Faun. Cal. in Abh. Akad. Wiss. Berlin, for 1838, 1839, 424. (Not *F. hudsonia*, Forster.)

Sp. Ch.—Head and neck all round sooty black; this color extending to the upper part of the breast, but not along the sides under the wings. Interscapular region of the back and exposed surface of the wings dark rufous brown. A lighter tint of the same on the sides of breast and belly. Rump brownish ash. Outer two tail feathers white; the third with only an obscure streak of white. Length, about 6 inches; extent, 9; wing, 3 00. Iris brown; bill pale pink in winter; legs light brown.

Hab.—Pacific coast of the United States to the eastern side of the Rocky mountains. Stragglers as far east as Fort Leavenworth in winter and Great Bend of Missouri.

The Oregon snow bird is a common species throughout the Territory, especially in winter, when it comes about houses and farms, with exactly the same habits as the common Atlantic species. In summer I have only seen it about Puget Sound, where it builds. I never could discover its nest, which is built in the forest, and on the ground, according to Nuttall. I noticed fledged young as early as May 24. At this season they are not gregarious, and frequent principally the edges of woods, having much the habits of the sparrows.—C.

Extremely abundant throughout Washington and Oregon Territories, where it takes the same position as the *J. hyemalis* does in the eastern States. An individual obtained by me at Fort Steilacoom weighed exactly three drachms.—S.

SPIZELLA MONTICOLA, Baird.

Tree Sparrow.

Fringilla monticola, Gm. Syst. Nat. I, 1788, 912.
Zonotrichia monticola, Gray, Genera.
Spizella monticola, Baird, Gen. Rep. Birds, p. 472.
Fringilla canadensis, Lath. Index, I, 1790, 434.—Aud. Orn. Biog. II, 1834, 511: V, 504; pl. 188.
Emberiza canadensis, Sw. F. B. Am. II, 1831, 252.—Aud. Syn. 1839.—Ib. Birds Amer. III, 1841, 83; pl. 166.
Spizella canadensis, Bon. List. 1838.—Ib. Conspectus, 1850, 480.
Fringilla arborea, Wils. Am. Orn. II, 1810, 12; pl. xii, f. 3.
"*Mountain Finch*, Lath. Syn. II, i, 265."

Sp. Ch.—Middle of back, with the feathers, dark brown centrally, then rufous, and edged with pale fulvous, (sometimes with whitish.) Hood and upper part of nape continuous chestnut; a line of the same from behind the eye. Sides of head and neck ashy. A broad light superciliary band. Beneath whitish, with a small circular blotch of brownish in the middle of the upper part of the breast. Edges of tail feathers, primary quills, and two bands across the tips of the secondaries, white. Tertiaries nearly black; edged externally with rufous, turning to white near the tips. Lower jaw yellow; upper black. Length, 6. 25 inches; wing, 3.

Hab.—Eastern North America to the Missouri; also on Pole creek and Little Colorado river, New Mexico.

Mentioned by Townsend as an inhabitant of Oregon. I shot a bird in January, 1855, at Fort Dalles, which, upon comparing with the description of *E. canadensis*, in Audubon's Synopsis, appeared to belong to that species. The skin was unfortunately lost.—S.

I saw once, in winter, some sparrows which I supposed to be the tree sparrow, but obtained no specimens. This was on the coast, and it is likely that they visit the interior at that season in great numbers, as it is mentioned by Townsend in his list of Oregon birds.—C.

SPIZELLA SOCIALIS, Bonap.

Chipping Sparrow.

Fringilla socialis, Wilson, Am. Orn. II, 1810, 127; pl. xvi, f. 5.—Aud. Orn. Biog. II. 1834, 21: V, 517; pl. 104.
Spizella socialis, Bon. List, 1838.—Ib. Conspectus, 1850, 480.—Baird, Gen. Rep. Birds, p. 473.
Emberiza socialis, Aud. Syn. 1839.—Ib. Birds Amer. III, 1841, 80; pl. 165.
Spinites socialis, Cabanis, Mus Hein. 1851, 133. (Type.)

Sp. Ch.—Rump, back of neck, and sides of neck and head, ashy. Interscapular region with black streaks, margined with pale rufous. Crown continuous and uniform chestnut. Forehead black, separated in the middle by white. A white streak over the eye, and a black one from the base of the bill through and behind the eye. Under parts unspotted whitish, tinged with ashy, especially across the upper breast. Tail feathers and primaries edged with paler, not white. Two narrow white bands across the wing coverts. Length, 5. 50; extent, 8. 50; wing, nearly 3. 00. Iris, brown; feet, pale brown; bill, black.

Hab.—North America, from Atlantic to Pacific.

The chipping sparrow frequents similar situations as in the east, and about houses shows the same familiar confidence as in the Atlantic States.—C.

This bird is common throughout the two Territories. I have obtained and preserved many skins. No appreciable difference in the habits of western individuals from those of the Atlantic coast. Extremely abundant in the open districts on the Columbia river, as well as upon the gravelly prairies of the Puget Sound district.—S.

MELOSPIZA RUFINA, Baird.

Western Song Sparrow.

"*Emberiza rufina*, Brandt, Desc. Av. Rossic. 1836, tab. ii, 5, Sitka." Bonaparte.

Passerella rufina, Bonap. Conspectus, 1850, 477.

Fringilla cinerea, (Gm.) Aud. Orn. Biog. V, 1839, 22; pl. 390.—Ib. Syn. 1839, 119.—Ib. Birds America, III, 1841, 145; pl. 187.

?? Fringilla cinerea, Gmelin, I, 1788, 922.

Fringilla (Passerella) guttata, Nuttall, Man. I, 2d ed. 1840, 581.

Zonotrichia guttata, Gambel, J. A. N. Sc. I, Dec. 1847, 50.

Melospiza rufina, Baird, Gen. Rep. Birds, p. 480.

Sp. Ch.—Bill slender. Similar in general appearance to *M. melodia*, but darker and much more rufous, the colors more blended. General appearance above light rufous brown, the interscapular region streaked very obsoletely with dark brownish rufous, the feathers of the crown similar, with still darker obsolete central streaks. A superciliary and very obscure median crown stripe, ashy. Under parts *brownish* whitish; the breast and sides of throat and body broadly streaked with dark brownish rufous; darker in the centre. A light maxillary stripe. Sides of the body tinged strongly with the colors of the rump, and leaving only a narrow space of the belly white. Under coverts brown. Length, 6. 75; extent, 8. 75; wing, 2. 70; tail, 3. 00. Bill, dusky; iris and feet, brown.

The western song sparrow is another instance of the closely analogous species found on this side of the continent, which, though constantly distinct in essential characters, are evidently made to fill the same place here as their relatives do on the Atlantic side. This species is a constant resident in the wild western portions of the Territory, never ranging far from the thicket which contains its nest, or the house where it has found food and protection. Almost every winter morning, as well as during summer, its cheerful song is heard from the garden or fence, as if to repay those who have shown it kindness or have even unconsciously protected it by their presence from rapacious animals. When unmolested it becomes very familiar, and the old birds will bring their young to the door to feed as soon as they leave the nest. Its song so nearly resembles that of the eastern bird in melody and variety that I cannot tell which is superior or point out the differences. In wild districts it is always to be found near brook-sides and thickets, where it seems to consider itself the proprietor, and jealously drives off other birds, either of the same or other species. Its nest is built on the ground or in a low bush. I have seen fledged young as early as May 6, at Olympia, although the rainy season was then scarcely finished.—C.

This is quite a common bird in the vicinity of Puget Sound, where it is resident throughout the year. I have found them in very different situations; in thickets at the edges of prairies, among stranded drift logs on open salt marshes, as well as in swamps and in the dense forests of Douglas fir, peculiar to the northwest coast. The voice of this species during the breeding season is singularly sweet and melodious, surpassing, I think, that of the meadow lark in melody and tone, but unequal to it in force.—S.

Sub-Family PASSERELLINAE.—Fox Sparrows.

PASSERELLA TOWNSENDII, Nuttall.

Townsend's Fox Sparrow.

Fringilla townsendii, Aud. Orn. Biog. V, 1839, 236; pl. 424, f. 7.—Ib. Syn. 1839.—Ib. Birds Amer. III, 1841, 43; pl. 187.

Fringilla (Passerella) townsendii, Nutt. Man. I, 2d ed. 1840, 533.

Passerella townsendii, Bon. Conspectus, 1850, 477.—Baird, Gen. Rep. Birds, p. 489.

Fringilla meruloides, Vig. Zool. Blossom, (Monterey,) 1839, 19.

Emberiza unalaschensis, Gm. I, 875, probably has some relation to the present species. It is based on the *Unalascha Bunting* of Pennant Arctic Zool. II, 364.

Sp. Ch.—Above very dark olive brown, with a tinge of rufous, the color continuous and uniform throughout, without any trace of blotches or spots; the upper tail coverts and outer edges of the wing and tail feathers rather lighter and brighter. The under parts white, but thickly covered with approximating triangular blotches like the back, sparsest on the middle of the body and on the throat; the spots on the belly smaller. Side almost continuously like the back; tibiae and under tail coverts similar, the latter edged with paler. Claws all very large and long; the hinder longer than its toe. First and sixth quills about equal.

Length, 7½ inches; extent, 9 to 11 inches. Iris brown; bill black, with lower mandible yellow; feet brown.

Townsend's sparrow seems to be the western analogue of the fox-colored species which visit the northern States in winter. It is only a winter resident in this Territory, where, in company with the song sparrow and other species, it frequents the thickets, keeping principally on the ground, and scratching among the leaves. It is most common in the interior; but in very cold weather seeks the coast, together with the snow birds and "chewinks." I observed a few lingering about the Straits of De Fuca until April; after which I saw no more of them until their return southward in October. I never heard them sing during their winter residence.—C.

Rather abundant near Fort Steilacoom, although not as common as the song sparrow, which it much resembles in habits and general appearance.—S.

Sub-Family SPIZINAE.—Painted Sparrows.

CYANOSPIZA AMOENA, Baird.

Lazuli Finch.

Emberiza amoena, Say, Long's Exped. II, 1823, 47.

Fringilla (Spiza) amoena, Bonap. Am. Orn. I, 1825, 61; pl. vi, f. 5.

Fringilla amoena, Aud. Orn. Biog. V, 1839, 64, 230; pls. 398 and 424.

Spiza amoena, Bonap. List, 1838.—Aud. Syn. 1839, 109.—Ib. Birds Am. III, 1841, 100; pl. 171.

Sp. Ch.—*Male.*—Upper parts generally, with the head and neck all round, greenish blue; the interscapular region darker. Upper part of breast pale brownish chestnut, separated from the blue of the throat by a faint white crescent; rest of under parts white. A white patch on the middle wing coverts, and an obscurely indicated white band across the ends of the greater coverts. Loral region black. Length, about 5.50; wing, 3.90; tail, 2.60.

Female.—Brown above; whitish beneath, with a trace of a buff pectoral band.

Hab.—High central plains to the Pacific.

Male.—Length, 5⅝; extent, 8⅝. Iris brown; bill black; feet dark brown.

The brilliant little Lazuli finch arrives at Puget Sound about May 15, and is abundant in open districts of the interior during the summer. Its habits and notes closely resemble those of the indigo bird, but its song is fainter. It builds a very similar nest, in a low bush, of fibrous roots and strips of bark, with which it is securely fastened to the surrounding branches. In this it lays four or five white eggs, faintly tinged with bluish. The plain flax brown female is rarely seen; but the male is not shy, but, if watched, will retire into the thickets.—C.

Found at the Dalles, Oregon Territory. Not seen by *me* west of the Cascades. The specimen I obtained at the Dalles was shot out of a flock of several hundred individuals which

had just arrived from the south in the spring. The fact of the *return* north of this species in large flocks is worthy of notice.—S.

GUIRACA MELANOCEPHALA, Sw.

Black-headed Grosbeak.

Guiraca melanocephala, Sw. Syn. Mex. Birds, Philos. Mag. I, 1827, 438.—Bon. List, 1838.—Ib. Consp. 1850, 502.—Baird, Gen. Rep. Birds, p. 498.

Coccothraustes melanocephala, Rich. List, Pr. Brit. Ass. for 1836, 1837.

Fringilla melanocephala, Aud. Orn. Biog. IV, 1838, 519; pl. 373.

Coccoborus melanocephalus, Aud. Synopsis, 1839, 133.—Ib. Birds Amer. III, 1841, 214; pl. 206.

Sp. Ch.—Head above and on the sides, with chin, back, wings, and tail, black. A broad median stripe on the crown, a stripe behind the eye, a well marked collar on the hind neck all round, edges of interscapular feathers, rump, and under parts generally pale brownish orange, almost light cinnamon. Middle of belly, axillaries, and under wing coverts, yellow. Belly just anterior to the anus, under tail coverts, a large blotch at the end of the inner webs of first and second tail feathers, a band across the middle and greater wing coverts, some spots on the ends of the tertiaries, the basal portions of all the quills, and the outer three primaries near the tips, white.

This bird is sparingly found in the vicinity of Fort Steilacoom, at which place I obtained two specimens. The person who killed these informed me that the song of the species is much like the *continued* lay of the robin, (*T. migratorius*,) but stronger and clearer.

No. 393, male, in immature plumage, killed at Fort Steilacoom, May 19, 1856. Length, 8; extent, 11.87. Another, No. 450, killed in June, same plumage, but *female*. Both these specimens were unfortunately lost among a batch of 110 birds sent by me from Fort Steilacoom, Puget Sound, in 1856, which have never since been heard of.—S.

PIPILO OREGONUS, Bell.

Oregon Ground Robin.

Pipilo oregonus, Bell, Ann. N. Y. Lyc. V, 1852, 6. Oregon.—Bonap. Comptes Rendus, XXXVII, Dec. 1853 922.—Ib. Notes Orn. Delattre, 1854, 22, (same as prec.)

Fringilla arctica, Aud. Orn. Biog. V, 1839, 49; pl. 394.

Pipilo arctica, Aud. Syn. 1839, 123.—Ib. Birds Am. III, 1841, 164; pl. 194, (not of Swainson.)

Sp. Ch.—Upper surface generally, with the head and neck all round to the upper part of the breast, deep black; the rest of lower parts pure white, except the sides of the body and under tail coverts, which are light chestnut brown; the latter rather paler. The outer webs of scapulars (usually edged narrowly with black) and of the superincumbent feathers of the back, with a rounded white spot at the end of the outer webs of the greater and middle coverts; the outer edges of the innermost tertials white; no white at the base of the primaries. Outer web of the first tail feather black, occasionally white on the extreme edge; the outer three with a white tip to the inner web. Length 8.50; extent 10.50; wing 4.40; tail 4. Female with the black replaced by brownish. Iris red; bill black and brown; feet brown. Iris of female olive brown.

Hab.—Coast of Oregon and Washington Territory.

The Oregon chewink is another representative species, having so closely the manner and appearance of the Atlantic species that a common observer might consider it no more than a local variety But it differs much in song, having none of the plaintive call from which the other takes its name, its cry when disturbed being a kind of "mew," from which it has derived the name of "cat-bird" in the country. Its song in spring, as it sits on a low bush enjoying the sunshine, is like the final trill of the red-wing, or the lisping, faint notes of the cow-bird. It is a constant resident in the Territory, but does not frequent the edge of the coast, except in winter. I also found it abundant about thirty miles south of San Francisco in autumn, and it is probably common to the whole region west of the Rocky mountains.—C.

Several Towhe buntings have been obtained by me west of the Cascade mountains. In habits they almost precisely resemble the species found in the Atlantic States, affecting principally brushy openings and swamp thickets. A specimen, marked 156, got by me at Fort Dalles, has on its label "Iris orange."—S.

Family ICTERIDAE.—The Trupials.

AGELAIUS PHOENICEUS, Vieillot.

Swamp Blackbird; Red-wing Blackbird.

Oriolus phoeniceus, Linn. Syst. Nat. I, 1766, 161.—Gmelin, I, 1788, 386.—Lath. Ind. Orn. I, 1790, 428.

Agelaius phoeniceus, "Vieillot, Anal. 1816."—Swainson, F. Bor. Am. II, 1831, 280.—Bonap. List, 1838.—Ib. Consp. 1850, 430.—Aud. Syn. 1839, 141.—Ib. Birds Amer. IV, 1842, 31; pl. 216.—Baird, Gen. Rep. Birds, p. 526.

Icterus phoeniceus, Licht. Verz. 1823, No. 188.—Bon. Obs. Wils. 1824, No. 68.—Aud. Orn. Biog. I, 1831, 348; V, 1839, 487; pl. 67.

Psarocolius phoeniceus, Wagler, Syst. Nat. 1827, No. 10.

Icterus (Xanthornus) phoeniceus, Bonap. Syn. 1828, 52.—Nuttall, Man. I, 1832, 167; 2d ed. 179.

Sturnus prædatorius, Wilson, Am. Orn. IV, 1811, 30; pl. xxx.

Red-winged oriole, Pennant, Arctic Zool. II, 255.

Sp. Ch.—Tail much rounded; the lateral feathers about half an inch shorter. Fourth quill longest; first about as long as the fifth. Bill large, stout; half as high, or more than half as high as long.

Male.—General color uniform lustrous velvet black, with a greenish reflection. Shoulders and lesser wing coverts of a bright crimson or vermilion red. Middle coverts brownish yellow, and usually paler towards the tips.

Female.—Brown above, the feathers edged or streaked with rufous brown and yellowish; beneath white, streaked with brown. Fore part of throat, superciliary, and median stripe strongly tinged with brownish yellow. Length of male, 9 to 9.50; extent, 14; wing, 5; tail, 4.15. Female smaller. A winter specimen measured only 8.25—12.75; probably of a late brood.

Hab.—United States, from Atlantic to Pacific.

The red-wing blackbird is not so abundant in this Territory as in more open countries, and is commonly to be found only about cultivated tracts. In the route of the expedition, after leaving Fort Vancouver, we saw none until reaching the farms at Fort Colville, near the 49th parallel, none apparently inhabiting the bare and mountainous prairie regions east of the Cascade mountains. During winter at Vancouver I found *this* species *only*, remaining in small flocks about stables and haystacks. They rarely visit the extensive salt meadows near the mouth of the Columbia, but are more common about Puget Sound—mostly near settlements, as usual. Compared with the immense numbers, of five different species, seen in California, blackbirds are only stragglers in this Territory.—C.

The swamp blackbird is quite common west of the Cascade mountains, preferring, as in other situations, the reedy borders of small lakes for its habitat. It arrives from the south in March.

A specimen of *A. gubernator* is mentioned by Baird in the General Report as having been collected by Dr. Townsend on the Columbia river. I suspect that it is very rarely found so far north, having never obtained it in Washington Territory myself, and I have never heard of any being found there but the specimen above mentioned. It is there replaced by the red-wing.—S.

STURNELLA NEGLECTA, Aud.

Western Meadow Lark.

Sturnella neglecta, Aud. Birds of Amer. VII, 1843, 339.
Baird, Gen. Rep. Birds, 537, and others.

Sp. Ch.—The feathers above dark brown, margined with brownish white, and with a terminal blotch of pale reddish brown. Exposed portions of wings and tail with transverse dark brown bars, which on the middle tail feathers are not confluent along the shaft. Beneath yellow, with a black pectoral crescent, the yellow extending on the side of the maxilla; sides, crissum, and tibiae, pale reddish brown, streaked with blackish. A light median and superciliary stripe, the latter yellow anterior to the eye; a black line behind.

Length, 10 to 10.50; extent, 15 to 17; wing, 5.25; tail, 3.25; bill, 1.25. Irids brown. Several specimens from Puget Sound scarcely differ from *S. magna*.

This species is so very closely related to *S. magna* as to render it very difficult to distinguish them. The same description as to pattern, colors, size, &c., will apply almost equally well to both. The prevailing shade of color is, however, decidedly paler in *neglecta*.

Habitat.—Western America, from high central plains to the Pacific. Very abundant on the Columbia and at Puget Sound.

I found the western meadow lark very abundant in all the prairies of the Territory, where it resides constantly, merely visiting the warmer coast meadows in very cold weather, but not remaining there during summer. The only reason I can assign why this and many other birds shun the seacoast is the prevalence of strong sea breezes there in summer, and a little greater amount of rain. It is, however, abundant on the higher and more sheltered prairies of Whidby island, at the Straits of De Fuca. I observed the habits and song of the meadow larks closely and in every locality, but could never see anything to characterize more than one species. Their song differs in notes, but not in style or tone, in different parts of the continent. A nest and eggs found at Steilacoom agree exactly with those of the Atlantic States. Is it not probable that the smaller specimens supposed to be of another species are only stunted birds of late broods, as is the case with the red-wings? I have found specimens of *all sizes*, from 10 to $11\frac{3}{4}$ inches in length, and 16 to $16\frac{3}{4}$ inches extent. The smallest I got in winter, at Vancouver, when but few remained, and those probably of late broods. In my late journey to Fort Laramie, Nebraska Territory, I observed with much surprise the fact first mentioned by Audubon, that after getting fairly out on the plains the song of the larks differs very much from that of the eastern bird, being louder and more varied; the same tunes prevailing as in Washington Territory and California, and thus corresponding with the range of the western species.—C.

This bird I found common on the east side of the Rocky mountains. It is exceedingly abundant throughout Oregon and Washington Territories, where a few remain throughout every winter. Their notes, calls, and songs, as already stated, are identical with those of the foregoing species, although I think that *one* call, or note of alarm, common to the *S. magna*, is wanting. This is the cry of the latter bird, probably familiar to many, but very difficult to describe, produced by the male when alarmed during the breeding season, flying from low bush to low bush, or to other points but slightly elevated from the ground, he endeavors to decoy the invader to a distance from his nest or young. It is a quick cry of either two or four syllables, dwelling long upon and accenting the last.

The greater number of individuals of this species retire to the south during the winter, but return very early in the spring, generally in early March. Pasture lands, open meadows, and prairies, are their favorite resort. In the fall they congregate in flocks before migrating.

In 1855 a few were seen as early as March 5 at Fort Dalles. On the 7th of the same month

I found them quite abundant on the ploughed fields near Fort Vancouver. Some of these had probably remained throughout the winter. I found them quite abundant at Fort Steilacoom in February, 1856. At Fort Dalles, on the 2d of May, 1855, I obtained young birds nearly fledged.—S.

ICTERUS BULLOCKII, Bon.

Bullock's Oriole.

Xanthornus bullockii, Sw. Syn. Mex. Birds, Taylor's Phil. Mag. I, 1827, 436.
Agelaius bullockii, Rich. Rep. Brit. Assoc. 1837.
Icterus bullockii, Bon. List, 1838.—Aud. Orn. Biog. V. 1839, 9; pl. 388 and 433.—Ib. Birds Amer. IV, 1842, 43; pl. 218.—Newberry, Rep. P. R. R. VI, iv, 1857, 87.—Baird, Gen. Rep. Birds, p. 549.

Sp. Ch.—Tail very slightly graduated. Upper part of the head and neck, back, wings, two central tail feathers, line from base of bill through the eye to the back of the nape, and a line from the base of the bill running to a point on the throat, black. Under parts generally, sides of head and neck, forehead and line over the eye, rest of tail feathers, rump, and upper tail coverts, yellow orange. A broad band on the wings, involving the greater and middle coverts, and the outer edges of the quills, white. Young male with the black replaced by greenish yellow, that on the throat persistent; female without this.

Length, about 7.50 inches; wing, 3.80; extent 12; iris brown, bill, black above, bluish below, feet gray.

Hab.—High Central Plains to the Pacific; rare on upper Missouri; south into Mexico; more abundant in the sparsely wooded districts of the eastern base of the Cascade mountains than in the coast region of Washington Territory.

Bullock's oriole does not arrive at Puget Sound until the beginning of June, and is not very common there. Its habits are similar to those of the orchard oriole, it being shy and difficult to discover among the foliage. Its song is more like that of the Baltimore, loud, clear, and varied. Nuttall appears to have mistaken this song for that of the black-headed grosbeak, which I never met with in the Territory, and calls this oriole a poor musician. From its shyness and similar colors such a mistake might easily occur.

A nest, probably of this species, I found in California in November, containing eggs, which had been deserted. It was entirely formed of white horsehair and cotton twine, and suspended in a low branch of an oak.—C.

This beautiful bird is exceedingly abundant at Fort Dalles, and also along the east base of Mount Adams, in Washington Territory. In the spring it arrives at Fort Dalles at the same time as the *Muscicapa verticalis*. During May they are very abundant among the low oaks of that place. The song of the male is very pleasant, and is especially melodious early in the morning, when the bird is generally perched on the sunny side or top of an oak. I saw one or two individuals of this species on the Nisqually plains, Puget Sound, in the summer of 1854; whereas, in 1856, although I kept a bright lookout for it, I did not see one. This shows that this bird, like many others, is subject to caprices of migration. I obtained several skins at Fort Dalles, where, during the breeding season, it is easily obtained.

A specimen (No. 168) of a male of this species, obtained by me at Fort Dalles May 7, 1855, exceeded the average measurements given under the head of "specific characters:" length, 8.08; extent, 12.75; wing, 4.—S.

SCOLECOPHAGUS CYANOCEPHALUS.

Brewer's Blackbird.

Psarocolius cyanocephalus, Wagler, Isis, 1829, 758.
Scolecophagus cyanocephalus, Cabanis, Mus. Hein. 1851, 193.
Scolecophagus mexicanus, Swainson, Anim. in Men. 2¼ cent. 1838, 302.—Bon. Conspectus, 1850, 423.—Newberry, Zool. Cal. and Or. Route; Rep. P. R. R. Surv. VI, iv, 1857, 86.
Quiscalus breweri, Aud. Birds Amer. VII, 1843, 345; pl. 492.

Sp. Ch.—Bill stout, quiscaline, the commissure scarcely sinuated; shorter than the head and the hind toe; the height nearly half the length above. Wing nearly an inch longer than tail; the second quill longest; the first about equal to the third. Tail rounded and moderately graduated; the lateral feathers about .35 of an inch shorter. General color of male black, with lustrous green reflections everywhere except on the head and neck, which are glossed with purplish violet. *Female* much duller, of a light brownish anteriorly; a very faint superciliary stripe.

Male, 9¾ inches; extent, 16¼ inches. Female, 9½ inches; extent, 14⅜ inches; wing, 5.30; tail, 4.40.

Hab.—High Central Plains to the Pacific; south to Mexico; Pembina, Minn.

In winter I obtained specimens of the western grackle at Vancouver, and have no doubt that it is a constant resident at the Columbia river. I have never seen them at Puget Sound. In notes and habits they are scarcely distinguishable from the rusty grackle of the Atlantic States. In winter they kept about the stables in flocks of fifty or more, and on warm days would fly about more in the tree tops, where, with the redwing, they sang their harsh but pleasant chorus for some hours. They are found throughout the Territory and east of the Rocky mountains.—C.

Quite abundant at Fort Dalles; rare west of the Cascade mountains. The species is a winter resident at the Dalles, where in flocks it may frequently be found in cold weather in the vicinity of barnyards and stables. The iris of the male bird is of a *bright yellow*, that of the female *brown*.—S.

Family CORVIDAE.

Sub-Family CORVINAE. Crows.

CORVUS CARNIVORUS, Bartram.

American Raven.

Corvus carnivorus, Bartram, Travels in E. Florida, 1793, 290. Baird, Gen. Rep. Birds, p. 560.

Corvus corax, Wilson, Am. Orn IX, 1825, 136; pl. lxxv, f. 3.—Bonap. Obs. Wils. 1825, No. 36.—Ib. Syn. 1828, 56.—Doughty, Cab. N. H. I, 1830, 270; pl. xxiv.—Rich. F. B. Am. II, 1831, 290.—Nuttall, Man. I, 1832, 202.—Aud. Orn. Biog. II, 1834, 476; pl. 101.—Ib. Syn. 1839, 150.—Ib. Birds Amer. IV, 1842, 78; pl. 224.

Corvus cacalott, Newberry, P. R. R. Rep. VI, iv, 1857, 82.

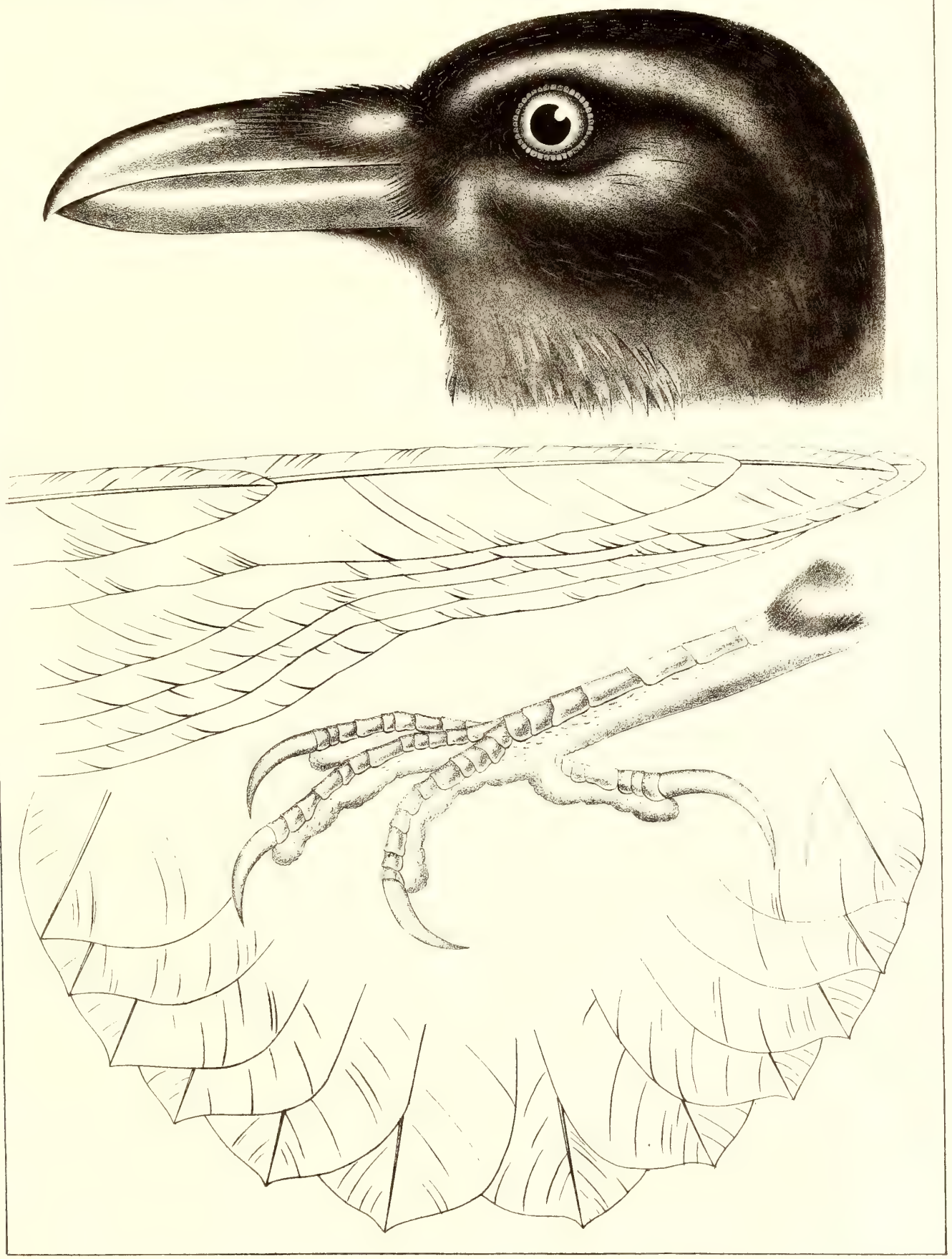
Corvus lugubris, Agassiz, Pr. Bost. Soc. N. H. II, Dec. 1846, 188.

Sp. Ch.—Fourth quill longest; third and fifth quill about equal; second between fifth and sixth; first nearly equal to the eighth. Length, about 24 to 25 inches; extent, 50 to 51; wing, about 17, tail, 10. Tail moderately graduated, the outer about 1.60 to 1.90 of an inch less than the middle. Entirely glossy back, with violet reflections.

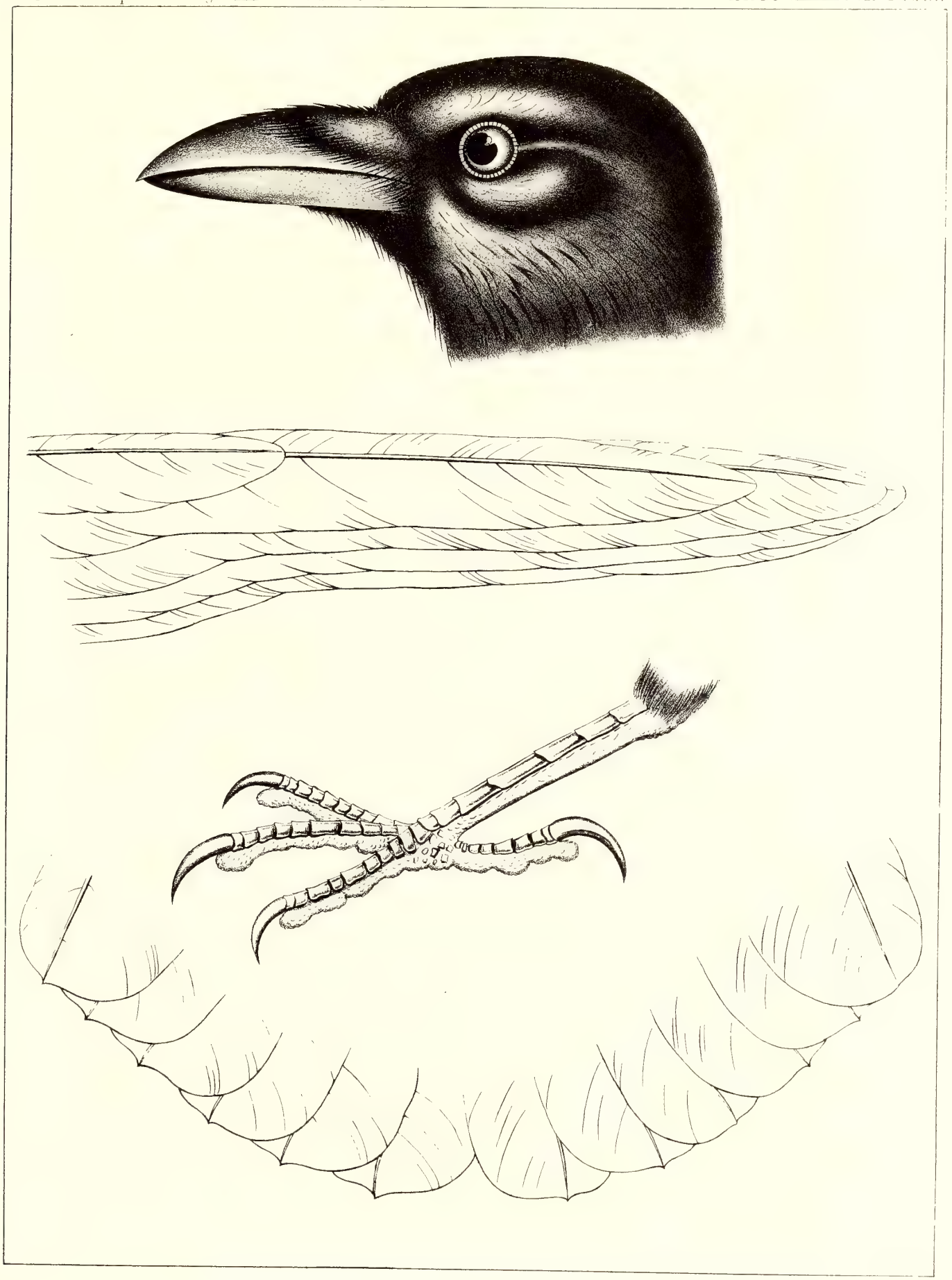
Hab.—Entire continent of North America. Rare east of the Mississippi.

The raven is very common in the mountainous western regions. During summer they are less abundant, as they are then scattered through the forests and mountains, but in winter they congregate about settlements and the sea-shore, where they can obtain a better supply of food. On the barren arid plains east of the Cascade mountains, they were very common during our journey there, while the common crow was rarely seen. At Vancouver, however, in winter, I observed them amicably associating together, and along the coast with the more gregarious fish-crows. Though they did not quarrel, the smaller crows would respectfully retire on the approach of the raven to its food. But during spring, when they had nests, the fish-crows would boldly attack and drive them away, being quicker and lighter on the wing than the raven. The only raven's nest I have seen was on a tree growing on a cliff about 50 feet high, on the shores of the Straits of De Fuca. It contained young in April.—C.

This bird I first found plentiful when, in going west, we reached the "great bend" of the upper Missouri. In the Rocky mountains and adjacent country it is very abundant, and



CORVUS CARNIVORUS



CORVUS AMERICANUS.

Bowen & Cº Lith. & Col. Philada

continues common to the Pacific coast. At Fort Steilacoom, in the summer of 1856, I obtained several specimens. One, obtained in 1854, at the same place, had a singular (abnormal) horny growth from the base of the lower mandible.—S.

CORVUS AMERICANUS, Aud.

Common Crow.

Corvus corone, Wilson, Am. Orn. IV, 1811, 79; pl. xxv, f. 3.—Bon. Obs. Wils. 1824, No. 37.—Ib. Syn. 1828, 56.—Rich. F. B. Am. II, 1831, 291.—Nuttall, Man. I, 1832, 209. Not *Corvus carone* of Linn.

Corvus americanus, Aud. Orn. Biog. II, 1834, 317: V, 477; pl. 156.—Ib. Syn. 1839, 150.—Ib. Birds Amer. IV, 1842, 87; pl. 225.—Bon. List, 1838.—Ib. Consp. 1850, 385.—Nuttall, Man. I, 2d ed. 1840, 221.—Maxim. Reise, I, 1839, 140—Newberry, Zool. Cal. & Or. Route, P. R. R. Rep. VI, iv, 1857, 82. Baird, Gen. Rep. Birds, p. 566.

Sp. Ch.—Fourth quill longest; second shorter than sixth; first shorter than ninth. Glossy black with violet reflections, even on the belly. Length, 19 to 20 inches; wing, 13 to 13.50; tail about 8. Tarsus longer than the middle toe and claw.

Hab.—North America to the Missouri region; also on the coast of California. (Not found on the High Central Plains?)

The common crow is somewhat less abundant than in the cultivated districts of the eastern States, and is generally to be found near settlements. I observed it in the open, uninhabited regions east of the Cascade mountains. Near the coast it appears rarely, the fish-crow replacing it.—C.

This species is occasionally met with in Washington Territory, but it is not abundant, being replaced by the succeeding species.—S.

CORVUS CAURINUS, Baird.

Northwestern Fish-Crow.

Corvus caurinus, Baird, Gen. Rep. 1858, p. 569.

Sp. Ch.—Fourth quill longest; fifth and third about equal; second longer than sixth; first shorter than ninth. Color black, glossed with purple. Tail nearly even. Tarsus longer than middle toe and claw. Length 16 to 16.50 inches; extent 32 to 33; wing about 11; tail about 7.

Hab.—Washington Territory and northwestern coast.

This fish-crow frequents the coast and inlets of this Territory in large numbers, and is much more gregarious and familiar than the common crow. Otherwise it much resembles that bird in habits, being vary sagacious, feeding on almost everything animal and vegetable, and having nearly the same cries, differing rather in tone than character. Its chief dependence for food being on the sea, it is generally found along the beach, devouring dead fish and other things brought up by the waves. It is also very fond of oysters, which it breaks by carrying them upward and dropping again on a rock or other hard material. When the tide is full they resort to the fields or dwellings near the shore and devour potatoes and other vegetables, offal, &c. They, like the gulls, perceive the instant of change of tide, and flocks will then start off together for a favorite feeding ground. They are very troublesome to the Indians, stealing their dried fish and other things, while, from superstitious feelings, the Indians never kill them, but set a child to watch and drive them away. They build in trees near the shore in the same way as the common crow, and the young are fledged in May.—C.

In Oregon and Washington Territories the fish-crow is very abundant, forming one of the marked ornithological features of the country. The great abundance of fish, especially of salmon, throughout both Territories afford an ample supply of food to the species. On Puget

Sound it is very plentiful throughout the year. In winter it subsists principally upon the refuse food and offal thrown out by the natives from their lodges, and is also an attentive hanger on at the residences of the white settlers. It is cunning, but very tame and impudent, allowing a very near approach, and when closely pursued retiring but a short distance. Like some species of gull, this bird is in the habit of carrying clams high in the air and then dropping them, in order to break the shell. In watching one thus employed I was very much amused at the unsuccessful endeavors he made to break the shell of a clam by letting it drop on *soft* ground. He continued for a long time carrying and recarrying the same clam high aloft and fruitlessly dropping it on the prairie sod. He nevertheless persisted perseveringly in his efforts until I became tired of watching him. What the result was I am unable to state.

A nest of this species which I found at Fort Dalles contained three eggs. It was situated in a dense willow thicket near a lagoon on the Columbia. The eggs were about one and a half inch long and very wide in their short diameter, and of a dirty green ground with brown spots.

Prof. Baird, in speaking of the similarity of this species with the *Corvus americanus*, says that "it is almost a question whether it be more than a dwarfed race of the other species." To this I would reply that its habits are too dissimilar to admit the doubt. It is not wary and suspicious like the common crow, but in its impudent familiarity with man closely resembles the English jackdaw, and scarcely learns to be shy even after being annoyed with the gun. —S.

PICICORVUS COLUMBIANUS, Bon.

Clarke's Crow.

Corvus columbianus, Wilson, Am. Orn. III, 1811, 29; pl. xx.—Bon. Obs. Wilson, 1824, No. 38.—Ib. Syn. 1828, 57.—Nuttall, I, 1832, 218.

Nucifraga columbiana, Aud. Orn. Biog. IV, 1838, 459; pl. 362.—Ib. Syn. 1839, 156.—Ib. Birds Amer. IV, 1842, 127; pl. 235.—Bon. List, 1838.—Nuttall, Man. I, 2d ed. 251.

Picicorvus columbiana, Bonap. Consp. 1850, 384.—Newberry, P. R. R. Rep. VI, iv, 1837, 83.—Baird, Gen. Rep. Birds, p. 573.

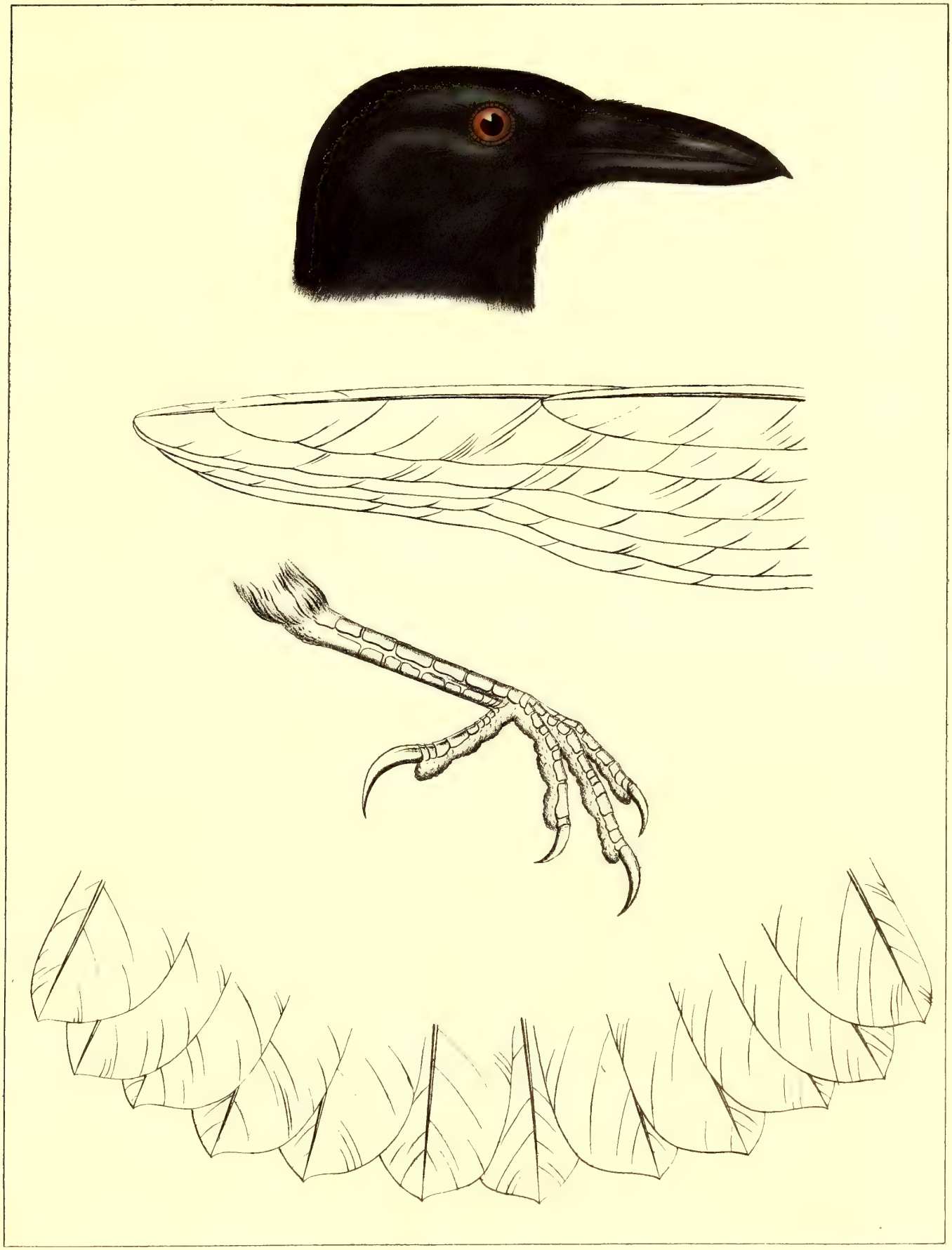
"*Corvus megonyx*, Wagler."

Sp. Ch.—Tail rounded or moderately graduated, the closed wings reaching nearly to its tip. Fourth quill longest; second considerably shorter than the sixth. General color bluish ash, changing on the nasal feathers, the forehead, sides of head, (especially around the eye,) and chin, to white. The wings, including their inner surface, greenish black, the secondaries and tertials, except the innermost, broadly tipped with white; tail white, the inner web of the fifth feather and the whole of the sixth, with the upper tail coverts, greenish black. The axillars plumbeous black, bill and feet black, iris brown.

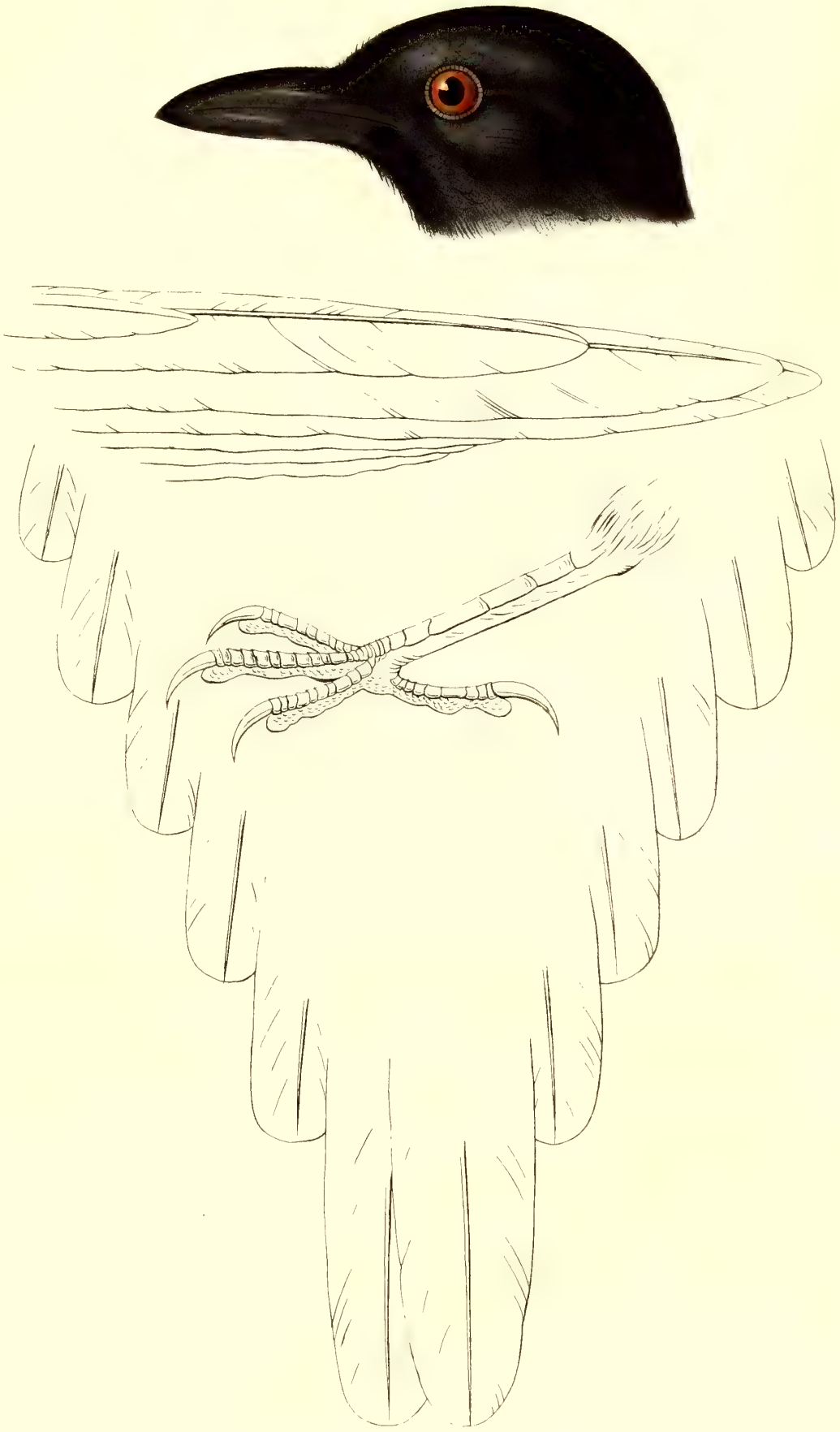
Length of male, (fresh,) 12. 50 inches; extent, 22. 50; wing, 7; tail, 4. 30; tarsus, 1. 20.

Hab.—From Rocky mountains to Pacific. East to Fort Kearney. Mauvaises Terres of the Upper Missouri.

After crossing the Cascade mountains eastward in 1853, I found the American nutcracker (or Clarke's crow) quite abundant along the banks of the Yakima river, whence it continued common northward wherever the long-leaved pine grows, whose seeds were its principal food. On returning to Vancouver, it appeared during the severe cold winter of January, 1854, in considerable numbers. I have never seen it at any other season west of the Cascade mountains, and think its migration westward is only during the coldest weather. It probably lives during summer very high in the mountains, as the pine and spruce grow nearly to their snow line. It doubtless extends eastward throughout the Territory, as I have shot it at Fort Laramie, Nebraska Territory, and a straggling pair even as far east as Fort Kearney. I have



CORVUS CAURINUS



PICA HUDSONICA

never seen this bird feed on anything but seeds and berries, and it rarely descends to the ground, never frequenting river banks or other places for dead fish and carrion, like crows. About the tops of the trees it may be seen extracting the seeds from cones; hanging head downwards like the chickadees. Its cry is loud and harsh like the crow's, and its flight rapid and steady, it having much larger wings than the jay. I have had no opportunity of observing its nest, which is probably built in high trees; perhaps burrowed in decayed wood, as with the European species.—C.

I have not myself obtained it on the Pacific side, but I was fortunate enough to get a specimen on Milk river, Nebraska, about 200 miles east of the Rocky mountains. The only bird of the kind I obtained I shot while it was flying past me, and as it was the only bird of the species I have seen I am unable to give any account of its habits.—S.

Sub-Family GARRULINAE.—The Jays.

PICA HUDSONICA, Bonap.

Magpie.

Corvus Pica, Forster, Phil. Trans. LXXII, 1772, 382.—Wilson, Am. Orn. IV, 1811, 75; pl. xxxv.—Bon. Obs. Wills. 1825, No. 40.—Ib. Syn. 1828, 57.—Nuttall, Man. I, 1832, 219.—Aud. Orn. Biog. IV, 1838, 408; pl. 357. Not of Linnaeus.

Corvus hudsonica, Jos. Sabine, App. Narr. Franklin's Journey, 1823, 25, 671.

Pica hudsonica, Bonap. List, 1838.—Ib. Conspectus, 1850, 383.—Maxim. Reise Nord. Amer. I, 1839, 508.—Ib. Cabanis' Journ. 1856, 197.—Newberry, Zool. Cal. & Or. Route, Rep. P. R. R., VI, iv, 1857, 84.—Baird, Gen. Rep. Birds, 576.

Cleptes hudsonicus, Gambel, J. A. N. Sc. 2d Ser. I, Dec. 1847, 47.

Pica melanoleuca, "Vieill." Aud. Syn. 1839, 157.—Ib. Birds Amer. IV, 1842, 99; pl. 227.

Sp. Ch.—Bill and naked skin behind the eye, black. General color, black. The belly, scapulars, and inner webs of the primaries, white; hind part of back grayish; exposed portion of the tail feathers glossy green, tinged with purple and violet near the end; wings glossed with green; the secondaries and tertials with blue; throat feathers spotted with white. Length, 19.00; wing, 8.50; tail, 11.00.

Hab.—The Arctic regions of North America. The United States from the High Central Plains to the Pacific, north of California.

This magpie is abundant throughout the central region of Oregon and Washington Territories. On our journey across from the Mississippi I first saw this bird about 100 miles west of Fort Union, the American Fur Company's trading post, at the mouth of the Yellowstone, although one of our hunters told me that he saw one several weeks before in the middle of Minnesota. As we approached the Rocky mountains they became more and more plentiful, until in the mountains themselves, along the borders of streams, they were continually met with. They are almost as abundant as far west as the Cascade mountains. The dense mass of forest here met with affords a pretty effectual barrier to their passage. On Puget Sound, west of these mountains, I did not observe a single bird of this species until August, 1856, after which time, during the fall, they became moderately abundant. They appeared to have crossed over from the east side of the mountains by some of the passes north of Mount Rainier, after the breeding season had ceased in the central section. I obtained two more specimens from Bellingham bay, near the 49th parallel north. An Indian from the northwest coast told me that the species is common at Sitka.

This bird is mischievous and gluttonous, but not so tame or so fond of the society of man as the

European species. They are very much disliked by the frontier traders and mountain men of interior Oregon on account of their vile propensity to alight on the sore backs of broken-down and chafed horses or mules, most unceremoniously picking and feeding upon the raw, sore flesh, notwithstanding the moans, kicks, and rolling of the poor tortured animals. In this manner many disabled beasts have been most irretrievably injured, and probably a vast number even killed. It is said that the mountain men and trappers of former times so hated this bird, on account of its evil propensity for horse flesh, that when one of them possessed but two bullets he was sure to fire *one* at a magpie if he had an opportunity. These birds breed throughout the interior. I obtained a young individual, nearly fledged, about May, 6, 1855, at Fort Dalles.

As with other birds of the genus, carrion affords its principal food. The dead cattle, so numerous along the great Oregon emigrant trail some years ago, afforded them an abundant supply of food during half the year. The species is partially migratory. At Fort Dalles I saw a few magpies staying throughout the winter. The majority of them, however, retire further south during the cold season.

One of the chattering cries of our magpie resembles much a peculiar call uttered by a Steller's jay.

I have never observed the yellow-billed magpie in Oregon.

When in the Rocky mountains I frequently noticed these birds assembling on the trees around us, just before we were to leave our camp. Instinct, or, perhaps, experience, had taught them that on our departure they would have "full swing" at the rinds of bacon and other culinary refuse of the deserted camp.—S.

I first met with the magpie east of the Cascade mountains, near the Yakima, and from there, in our journey northward to the 49th degree, it was common, as well as in all the open unwooded regions, until we again passed the mountains on our return westward. I saw nothing of it at Vancouver during the winter, which was severe enough to cause a migration of several other species of birds towards the coast. In the spring of 1855 I heard that magpies had been on Whitby's island during the winter, but none remained in March. I suppose, therefore, that a few migrate to the westward in winter. I have heard of magpies frequenting the Columbia river at Astoria, and near the mouth of the Willamette, in summer. I have never seen these; but think they may be stragglers of the Californian species, which have followed the plains of the Willamette to its outlet. Both species inhabit open regions, and the dense forests of the lower Columbia must be very ill suited for their resorts. I have never found the magpies on the upper Columbia as familiar as they have been represented to be in winter. In summer they seemed rather shy, frequenting the thickets along streams and being commonly silent.—C.

CYANURA STELLERI, Swainson.

Steller's Jay.

Corvus stelleri, Gmelin, Syst. Nat. I, 1788, 370.—Lath. Ind. Orn. I, 1790, 158.—Pallas, Zoog. Rosso-As. I, 1811, 393.—Bonap. Zool. Jour. III, 1827, 49.—Ib. Suppl. Syn. 1828, 433.—Aud. Orn. Biog. IV, 1838, 453; pl. 362.

Garrulus stelleri, Vieillot, Dict. XII, 1817, 481.—Bonap. Am. Orn. II, 1828, 44; pl. xiii.—Nuttall, Man. I, 1832, 229.—Aud. Syn. 1839, 154.—Ib. Birds Amer. IV, 1842, 107; pl. 230. Not of Swainson, F. Bor. Amer.?

Cyanurus stelleri, Swainson, F. Bor. Am. II, 1831, 495, App.
Cyanocorax stelleri, Bon. List, 1838.
Cyanocitta stelleri, Cab. Mus. Hein. 1851, 221.—Newberry, P. R. R. Rep. VI, iv, 1857, 85.
Cyanogarrulus stelleri, Bonap. Conspectus, 1850, 377.
Steller's crow, Pennant, Arctic Zool. II, Sp. 139.—Lath. Syn. I, 387.
Cyanura stelleri, Sw. Baird, Gen. Rep. Birds, 1858, p. 581.

Sp. Ch.—Crest about one-third longer than the bill. Fifth quill longest; second about equal to the secondary quills. Tail graduated; lateral feathers about .70 of an inch shortest. Head and neck all round, and fore part of breast, dark brownish black. Back and lesser wing coverts, blackish brown, the scapulars glossed with blue. Under parts, rump, tail coverts, and wing, greenish blue; exposed surfaces of lesser quills dark indigo blue; tertials and ends of tail feathers rather obsoletely blanded with black. Feathers of the forehead streaked with greenish blue. Length, 12.25 inches; extent, 18; wing, 5.85; tail, 5.85; tarsus, 1.75. Iris brown, bill and feet black.

Hab.—Pacific coast of North America; east to St. Mary's Mission, Rocky mountains.

Steller's jay is very common in all the forests of the Territory on both sides of the Cascade mountains. It has much the same habits as the blue-jay of the eastern States, but differs in notes, having a louder and harsher voice. It seems to depend upon the forests chiefly for its food, but in winter visits the vicinity of houses, stealing potatoes and almost anything eatable. During these forages on the garden, made during the early morning, they are very silent and watchful, evidently conscious of the criminality of their actions, and when discovered fly off to the concealment of the forest. They will also visit Indian lodges while the owners are absent, and enter them if possible, one all the time keeping watch. In the forest they are not shy, but often rather boldly follow intruders, screaming and calling their fellows around. Where hazelnuts grow these are a great article of winter food for them. To break the shells they carry them to a branch, and fixing them in a notch of the bark, hammer with their bill till the nut is extracted. In summer they suck bird's eggs, and doubtless often devour young birds. The nest is large, loosely built of sticks, and placed in a bush or tree. I have never seen the eggs, but the young are fledged by the middle of June.—C.

The Steller's jay is, probably, the most abundant bird of its size in all the timbered country between the Rocky mountain divide and the Pacific ocean. It is tame and loquacious, and possessed of a most impudent curiosity. The nickname given to this bird by the Nisqually Indians is "Sky-ky," or *the chief*. It is a hardy, tough bird, and a constant winter resident of Washington Territory. This jay is remarkable for its varied cries and notes, having one for nearly every emotion or pursuit in which it may be engaged. I think it also has a fondness for mimicing the cries of other birds. I have frequently been most pleasantly excited in hopes of obtaining a rare bird, the cry of which I had never heard before, and which was then issuing from some clump of bushes or thicket; but was almost invariably disappointed by finding that the strange notes had issued from this jay. It mimics the principal cry of the *Mimus felivox* perfectly. The males and females of this species are alike in appearance. Two male birds that I skinned in 1856 measured, each, 12 by 17.—S.

Note.—The Californian jay *(Cyanocitta californica)* Townsend mentions obtaining on the Columbia river. I have never seen it in either Territory.—S.

PERISOREUS CANADENSIS, Bonap,

Canada Jay.

Corvus canadensis, Linn. Syst. Nat. I, 1766, 158.—Forster, Phil. Trans. LXII, 1772, 382.—Wilson, Am. Orn. III, 1811, 33; pl. xxi.—Bon. Obs. 1824, No. 42.—Aud. Orn. Biog. II, 1834, 53: V, 1839, 208; pl. 107.

Garrulus canadensis, Bon. (Saggio, 1831?) Syn. 1828, 58.—Swainson, F. Bor. Am. II, 1831, 295.—Nuttall, Man. I, 1832, 232.—Aud. Syn. 1839, 155.—Ib. Birds Amer. IV, 1842, 121; pl. 234.

Dysornithia canadensis, Swainson, F. Bor. Am. II, 1831. Appendix.

Perisoreus canadensis, Bon. List, 1838.—Ib. Conspectus, 1850, 375.—Newberry, Rep. P. R. R. Surv. VI. iv, 1857, 85.—Baird, Gen. Rep. Birds, 590.

Sp. Ch.—Tail graduated; lateral feathers about one inch shortest. Wings a little shorter than the tail. Head and neck, and fore part of breast, white. A plumbeous brown nuchal patch, becoming darker behind, from the middle of the crown to the back, from which it is separated by an interrupted whitish collar. Rest of upper parts ashy plumbeous; the outer primaries margined, the secondaries, tertials, and tail feathers obscurely tipped with white. Beneath smoky gray. Crissum whitish, iris brown, bill and feet black. Length, 10.70; extent, 16.50; wing, 5.75; tail, 6.00; tarsus, 1.40.

Hab.—Northern America into the northern parts of United States from Atlantic to Pacific; more south in Rocky mountains.

I first saw the Canada jay at the mouth of the Columbia river in March, 1854, when they were in a small scattered flock, industriously seeking insects and seed among the spruce trees, much in the manner of the titmice, occasionally whistling in a loud melodious tone like the cardinal bird. I have always found them near the same place at all seasons, and, having shot a newly fledged young bird there in July, have no doubt they build in the vicinity. I have not observed the bird common in any other locality, but it seems to be well known in the country by the name of "meat bird," as it will watch hunters and pick at the deer or other meat they hang in the woods. They sometimes show great boldness in obtaining their favorite food. I have seen them enter a boat containing several person to steal some salmon roe. It is commonly, however, a shy bird, remaining in the dense forest, where in this Territory it can usually obtain sufficient food. Its notes differ much from the other jays in being clear and musical, and they sometimes show considerable variety of song, though generally they are silent. They seem to prefer the spruce forests along the coast, but I have seen a few at Puget Sound.—C.

The only specimen of the Canada jay seen by me on Puget Sound was obtained at Port Townsend, having been killed in the forest of firs and spruce trees near Point Wilson. I think that it is not a common species at the head of the sound, but prefers the more immediate vicinity of the ocean, probably on account of the different character of the forests there found.

Mr. Robert Kennicott informs me that the vulgar name of this bird, common among hunters, "*Whiskey Jack*," is probably a corruption of its Chippewa name, "*Wiss-ka-chon*," which has been twisted by former "mountain men" into whiskey *John*, and then *whiskey Jack*.—S.

ORDER IV. RASORES.—The Scratching Birds.

Family COLUMBIDAE.—The Pigeons.

COLUMBA FASCIATA, Say.

Band-tailed Pigeon.

Columba fasciata, Say, Long's Exped. R. Mts. II, 1823, 10.—Bon. Amer. Orn. I, 1825, 77; pl. viii.—Ib. Syn. 1828, 119.—Ib. List, 1838, &c.—Baird, Gen. Rep. Birds, p. 597.

Chloroenas fasciata, Bonap. Conspectus, II, 1854, 51.

Columba monilis, Vigors, Zool. Beechey's Voyage, 1839, 26: pl. x.

Sp. Ch.—Above olivaceous, tinged with ash, changing on the wing coverts to bluish ash, of which color are the hinder part of the back, rump, and basal portion of the tail. The terminal third of the tail is whitish brown, with a tinge of ash, succeeding a narrow bar of dusky. Head all round, sides of neck and under parts, including tibia, purplish violet; the middle of the abdomen, anal region, and crissum, whitish. Tibia and throat tinged with blue. Quills brown, narrowly margined with white. A conspicuous narrow half collar of white on the nape; the feathers below this to the upper part of the back metallic golden green. Bill and feet yellow; the former black at tip. Iris carmine, bordered with gold color; bill yellow and black; feet yellow.

Female similar, with less purple; the nuchal collar of white obsolete or wanting. Somewhat smaller than the male.

Length, 15 to 16.50 inches; extent, 25 to 26; wing, 8.80; tail, 6.10.

Hab.—From Rocky mountains to Pacific coast; south to New Leon, Mexico.

The band-tailed pigeon arrives at Columbia river in April, and frequents all the forests of the Territory until the end of October, when they retire south. They keep about the borders of prairies and clearings, and frequently do much damage to fields of grain, though never found in such immense numbers as the wild pigeon east of the Mississippi. In June they lay two white eggs, about the same size as the house pigeons, on the ground near streams or openings, without constructing any nest. During summer they feed on wild cherries and other fruits, wild peas, which are very abundant, and probably later depend on acorns and hazel nuts. Their cooing is much like that of the common pigeon. I have not seen them east of the Cascade range.—C.

The band-tailed pigeon is a very common bird in Washington Territory, especially west of the Cascade mountains; I saw but one flock containing 5 individuals east of those mountains. In 1856 the first birds of this species that arrived in the spring made their appearance about May 15, which is about the customary time every year for their arrival. One or two individuals are first seen, and within two or three days thereafter the main body of the migration follows. A small number remain throughout the summer and breed; the rest retire further north. Those that remain generally make their nests in thick fir forests near water. They subsist during the summer on wild cherries and other berries, and later in the season, since the country has become settled, upon grain.

About the first week in September large flocks congregate on stubble fields in the vicinity of Fort Steilacoom, and for two or three weeks thereafter their numbers are daily augmented by arrivals from the north. Some flocks of these pigeons that I saw in September, 1856, must have contained at least one thousand individuals. I am told that in the cultivated district on the Cowlitz river, at the same season, they are in still greater numbers. By the 5th of October of the year 1856 all had suddenly disappeared, with the exception of a few stragglers, generally young birds. In flying, the flocks, I think, are not quite as compactly crowded as those of the

passenger pigeon. During the summer, while breeding, their cooing and calls can be heard a long distance. The name of this bird, in the Nisqually language, is "hubboh," a good imitation of its call. The practice is very common among these Indians to name birds and animals from the sound of their calls and cries. Another example of this is the name of the Hutchins goose, "*ah-hah*," which is repeated once or twice to imitate their "honking."

In the autumn these birds are in excellent order for the table; indeed, I prefer them to the wild pigeon of the Atlantic.—S.

ECTOPISTES MIGRATORIA, Swainson.

Wild Pigeon; Passenger Pigeon.

Columba migratoria, Linnaeus, Syst. Nat. I, 1766, 285.—Gm. I, 389.—Forster, Phil. Trans. LXII, 1772, 398.—Wilson, Am. Orn. I, 1808, 102; pl. xliv.—Bon. Obs. Wils. 1825, No. 179.—Wagler, Syst. Av. 1827, No. 91.—Aud. Orn. Biog. I, 1831, 319; V, 561; pl. 62.

Ectopistes migratoria, Swainson, Zool. Jour. III, 1827, 355.—Ib. F. Bor. Am. II, 1831, 363.—Bon. List, 1838.—Ib. Consp. Av. II, 1854, 59.—Aud. Syn. 1839, 194.—Ib. Birds Amer. V, 1842, 25; pl. 285.—"Reich. Icones Av. tab. 249, figs. 1377, 1379."—Baird, Gen. Rep. Birds, p. 600.

[For extended synonymy see Baird's Gen. Rep.]

A bird in immature plumage, which I took to belong to this species, I saw in a clump of choke cherry bushes on a branch of Milk river, near Bear's Paw mountains, Nebraska, about 175 miles east of the main range of the Rocky mountains. I think that the eastern base of the latter chain may be considered their western limit. The country west of these mountains, with the exception of a narrow strip near the Pacific, seems, geographically and botanically, unsuited to the wants of the species.—S.

Townsend mentions the *E. migratoria* as found in "Oregon," but I have never seen or heard of it; though, as I have seen it at Fort Laramie, it *may* cross the Rocky mountains into the eastern part of the Territory.—C.

ZENAIDURA CAROLINENSIS, Bonap.

Carolina, or Common Dove.

Columba carolinensis, Linnaeus, Syst. Nat. I, 1766, 286, No. 37.—Gmelin, I, 787.—Latham, Ind. II, 1790, 613.—Wilson, Am. Orn. V, 1812, 91; pl. xliii.—Bon. Obs. 1825, No. 159.—Aud. Orn. Biog. I, 1831, 91: V, 1839, 555; pl. 17.—Nuttall, Man. I, 1832, 626.

Ectopistes carolinensis, Rich. List, 1837.—Bonap. Geog. List, 1838.—Aud. Syn. 1839, 195.—Ib. Birds Amer. V, 1842, 36; pl. 286.

Zenaidura carolinensis, Bonap. Consp. Av. II, 1854, 84. Type.—Baird, Gen. Rep. Birds, p. 604.

Columba marginata, Linnaeus, Syst. Nat. I, 1766, 286, No. 40, (best description.)—Gmelin, I, 1788, 791.—Wagler, Syst. Av. 1827, No. 91.—Ib. Isis, 1831, 519.

Ectopistes marginata, Gray, List, Br. Mus.

? Ectopistes marginellus, Woodhouse, Pr. A. N. Sc. VI, June, 1852, 104.—Ib. Expl. Zuñi & Color. 1853, 93, Birds, pl. v. Canadian river, Ark. Immature bird.

? Zenaidura marginella, Bonap. Consp. Av. II, 1854, 85.

Sp. Ch.—Tail feathers 14. Above bluish, although this is overlaid with light brownish olive, leaving the blue pure only on the top of the head, the exterior of the wings, and the upper surface of the tail, which is even slightly tinged with this color. The entire head, except the vertex, the sides of the neck, and the under parts generally, light brownish red, strongly tinged with purple on the breast, becoming lighter behind, and passing into brownish yellow on the anal region, tibia, and under tail coverts. Sides of the neck with a patch of metallic purplish red. Sides of body and inside of wings clear light blue. Wing coverts and scapulars spotted with black, mostly concealed, and an oblong patch of the same below the ear. Tail feathers seen from below blackish, the outer web of outermost white, the others tipped with the same, the color becoming

more and more bluish to the innermost, which is brown. Seen from above there is the same gradation from white to light blue in the tips; the rest of the feather, however, is blue, with a bar of black anterior to the light tip, which runs a little forward along the margin and shaft of the feather. In the sixth feather the color is uniform bluish, with this bar; the seventh is without bars. Bill black; feet yellow. Female smaller, with less red beneath. Length of male, 12. 50 to 12. 85; extent, 17. 25 to 18; wing, 5. 75; tail, 6. 70.

Hab.—Throughout the United States, from Atlantic to Pacific; Cuba, Gundlach.

The *Carolina dove* is common about prairies and farms of the interior, and probably some remain all winter in the Territory, though none were at Vancouver in the snowy winter of 1853. They rarely appear along the coast border, but doubtless extend east to the Rocky mountains.—C.

Very abundant throughout both Territories. At Fort Steilacoom this species arrives and departs at about the same time as the *Columba fasciata*. During my residence there I obtained many specimens for comparison with eastern birds.

NOTE.—I noticed a small dove in the Simcoe valley, near the Yakima river, Washington Territory, in June, 1855. It appeared smaller and much *darker* than this species, being of a *dark* blue. I was, unfortunately, unable to obtain a specimen for preservation.—S.

Family TETRAONIDAE.—The Grouse.

TETRAO OBSCURUS, Say.

Dusky Grouse; Blue Grouse; Pine Grouse.

Tetrao obscurus, SAY, Long's Exped. R. Mts. II, 1823, 14.—BON. Syn. 1828, 127.—Sw. F. Bor. Am. II, 1831, 344; pl. lix, lx.—NUTTALL, Man. I, 1832, 666.—AUD. Orn. Biog. IV, 1838, 446; pl. 361.—IB. Syn. 1839, 283.—IB. Birds Amer. I, 1842, 89; pl. 295.—BAIRD, Gen. Rep. p. 620.—NEWBERRY, Rep. P. R. R. Surv. VI, iv, 1857, 93.

Canace obscura, BONAP. Comptes Rendus, XLV, 1857, 428.

Tetrao richardsonii, DOUGLAS, Trans. Linn. Soc. XVI, 1829, 141.

SP. CH.—Sexes dissimilar. Tail of twenty feathers. Above bluish black; plumbeous or black beneath. Tail uniform black, and finely and obscurely mottled above. Tail broadly tipped with light slate. Beneath uniform plumbeous. A dusky half collar on the throat. The chin and throat above white, varied with black. Tail about two-thirds the length of the wings, broad, rounded, composed of twenty broad, even, and truncated feathers. Tarsi feathered to the toes, the feathers extending along the sides of the basal half of the first joints of the toes. Pectinations on the sides of the toes very short. Length, 20. 40; wing, 9. 40; tail, 7. 45.

Hab.—Black Hills of Nebraska to Cascade mountains of Oregon and Washington.

The dusky or "blue grouse," as it is called in the western country, is common in most of the forests of the Territory, though rather in the dense spruce forests near the coast. As it rarely appears on the open prairie, it is difficult to start, and still more so to find, if, as usual, it alights on a tree. So perfectly motionless does it sit, that though one may be looking straight at it he will probably mistake it for a knot or a bunch of leaves. I have often searched carefully every branch, and after concluding that the bird was not there, and starting to go, had the satisfaction of seeing it sail off from the very same tree towards some distant part of the forest. During May, near the coast, and until August, on the mountains, the low tooting of this grouse is heard everywhere, sounding something like the cooing of a pigeon, and in the same deep tone as the drumming of the ruffed grouse. It has the power of ventriloquism, so that while the bird may be sitting in a tree overhead the sound seems to come from places quite distant. I have not seen the nest or eggs, but in June flocks of half-grown young are murdered by the Indians near Puget Sound. In winter they are so rarely seen west of the mountains that the

people think they must keep entirely in the trees. In October, 1853, I saw, however, a flock, running through the snow, near the Spokane plains, and one of them was shot; but I have never seen them since then in winter.—C.

This bird, called generally in Oregon the *blue* grouse, also known as pine grouse, dusky grouse, &c., I met, for the first time, when our exploring party reached the main chain of the Rocky mountains, where we found it exceedingly abundant, but not more so than in the Blue mountains of Oregon, Cascade mountains, and in all the timbered country between the last mentioned range and the Pacific coast. In the autumn, about November 15, they generally disappear, and it is rare, indeed, to see a single individual of the species during the interval between that period and about March 20 of the following year. Concerning the whereabouts of this bird during the winter there are many opinions among the settlers. Some maintain that the species is migratory, and that they retire to the south, while others say that they repair to the tops of the highest evergreen trees, where, in the thickest foliage of the branches, they pass the cold season in a state of semi-torpor, rarely or never descending until warm weather comes on. As they subsist well on the leaves of the coniferae, and can always obtain sufficient water from the snow and rain drops on the leaves to supply their necessities, I have but little doubt that this latter is the correct account, or that, if migratory, they are but *partially* so. I saw one bird of this species on the ground, during a fall of snow, in January 1854, near the Nisqually river, Washington Territory; and I have been told that a man, near Olympia, Washington Territory, whose *eye-sight* is excellent, is able any day during winter to obtain several birds by searching carefully for them in the tree tops of the tallest and most thickly leaved firs. This requires eye-sight of much greater power than most men possess. Even in the summer, when these birds are generally lower in the trees, it is very difficult to find them among the dense branches. They have, in addition to their sombre hues, the advantage of their habit, of crowding very closely to the limbs, and of sitting almost immovably for hours.

The first indication, in the spring, of their arrival? or activity? is the courting call of the male. This call is a prolonged noise, sounding much like the whir of a rattan cane whirled suddenly through the air. It is repeated quickly several times, and then stops for a brief interval. This noise is said to be produced by inflating and contracting a couple of sacks on each side of the throat, which are for the most part concealed when collapsed, and are covered by an orange-yellow, thick, corrugated, unfeathered skin. These birds, at Fort Steilacoom, are very abundant throughout the spring and early summer. They are there mostly confined to the forests of fir trees, (ABIES DOUGLASSII.) Late in the season, after hatching, they may be found generally at mid-day on the ground, in search of berries, seeds, &c. When alarmed they almost invariably seek safety among the dense foliage of the trees, instinctively appearing to understand the advantages of thus hiding. In the autumn they are more generally found on the ground, feeding on sallal and other berries. One day, in October, 1856, I saw on the Nisqually plains, amongst fern and grass, five of these birds, full grown, and in excellent order. A man killed the whole five, one by one, with a double-barrelled gun, without an attempt being made by a single individual to fly. This grouse is a very fine table bird; the little dash of *pine taste* its flesh possesses only adding to its game flavor. I have known males, in June, weighing three and a half pounds, although they rarely exceed two and three-fourths pounds.

By August 1 the young are generally half grown. They are then easily killed on the wing, and are excellent for the table.

George Gibbs, esq., in a letter to me, says: "The apparatus with which the blue grouse

produces the singular hooting, with which the male solaces his lonely hours, is worthy of dissection and study. I have seen this bird as far south as the Russian River mountains in California. It is common on the east side of the Cascades, as far north as the 49th parallel."—S.

TETRAO FRANKLINII, Douglas.

Franklin's Grouse; Tyee Grouse.

Tetrao franklinii, Douglas, Trans. Linn. Soc. XVI, 1829, 139.—Rich. F. Bor.-Am. II, 1831, 348; pl. lxi.—Baird, Gen. Rep. Birds, p. 623.

Tetrao canadensis, var. Bonap. Am. Orn. III, 1830, 47; pl. xx.

? Tetrao fusca, Ord, Guthrie's Geog. 2d Am. ed. II, 1815, 317. Based on small brown pheasant of Lewis & Clark, II, 182, which very probably is this species.

Sp. Ch.—Tail of sixteen feathers. Feathers above distinctly banded with plumbeous; beneath uniform black, with a pectoral band of white. Chin and throat above black, the tail feathers entirely black, without orange brown terminal band; the upper tail coverts broadly tipped with white. Wing, 7. 35; tail, 5. 62.

Hab.—Northern Rocky mountains, and west.

Abundant in the Rocky and Bitter Root mountains, also found in the Cascade mountains, Washington Territory, near the Yakima Passes. This bird, by the Indians, has the jargon name, "Tyee Kulla-Kulla" or the "chief bird," or perhaps more correctly the *gentleman bird.*

Washington Territory contains five of the species of *Tetrao* or tail grouse known to exist in North America, the only species not found within its limits being the *Tetrao cupido* or pinnated grouse, the *Bonasa umbellus*, and, if distinct, the *Tetrao canadensis.* Of the five native species there is not one but can be said to be plentiful in some portion of the Territory. In the interior arid regions the species *urophasianus and phasianellus* abound, the first being only found in that region, the others extend into the Rocky mountain valleys. In the extreme east *T. franklinii*, *T. obscurus*, and *Bonasa sabinii* are plentiful, whereas in the extreme west but the two last mentioned. In the western section, owing to the abundance of food, thick covers, and absence of foxes, it is probable that both species will always remain numerous.

As may be inferred from this notice of their limits, all the five species of grouse may be found within a few miles of Fort Dalles on the Columbia, besides, perhaps, a Ptarmigan near the limits of perpetual snow on the sides of Mount Hood.

The specimens of *Tetrao franklinii*, sent by me to the Smithsonian, were obtained by Lieutenant John Mullan, United States army, at the St. Mary's valley in the Rocky mountains. Lieutenant Mullan stated to me that they were quite an abundant bird in that region, and very readily killed, as they are tame and unsuspicious. The skins were thrown in alcohol, but, unfortnately, in drying became much damaged.—S.

*Mr. George Gibbs, in a letter to me, speaks as follows of a grouse shot by him, which probably belonged to this species: "I should mention that in November, 1849, I shot a bird on the Willamette valley much resembling the hen of the ruffed grouse, but not more, at most, than two thirds the size. I could not identify it by any description in Nuttall's Manual, and had no means of preserving the skin. It seemed in adult plumage; had no ruff. I did not ascertain the sex, but suppose it to be a female; I have never since met with a similar bird."

Again he says: "Mr. Bolon (an old resident in the Territory) says that there is a grouse on the tops of the Cascade mountains, near Rainier, less than the ruffed grouse, but the same color, has no ruff. It is a shorter bird than the sharp-tailed, but stout in proportion. The eyelids and wattles on the neck, *bright red*, where in the blue grouse they are yellow. Abundant and very tame. The Indians call them the *tyee* grouse."

CENTROCERCUS UROPHASIANUS, Swainson.

Sage Cock; Cock of the Plains.

Tetrao urophasianus, Bonap. Zool. Jour. III, Jan. 1828, 214.—Ib. Am. Orn. III, 1830; pl. xxi, f. 1.—Ib. Mon. *Tetrao*, in Trans. Am. Phil. Soc. N. S. III, 1830, 390.—Douglas, Trans. Linn. Soc. XVI, 1829, 133.—Nuttall, Man. I, 1832, 666.—Aud. Orn. Biog. IV, 1838, 503; pl. 371.—Ib. Syn. 205.—Ib. Birds Amer. V, 1842, 106; pl. 297.—Newberry, Zool. Cal. & Or. Route; Rep. P. R. R. Surv. VI, iv, 1857, 95.

Tetrao (*Centrocercus*) *urophasianus*, Sw. F. Bor. Am. II, 1831, 358; pl. lviii.

Centrocercus urophasianus, Jardine, Game birds, Nat. Lib. Birds, IV, 140; pl. xvii.—Baird, Gen. Rep. Birds, p. 624.

?? Tetrao phasianellus, Ord, Guthrie's Geog. 2d Am. ed. II, 1815, 317, based on Lewis & Clark, II, 181.

Cock of the plains, Lewis & Clark, II, 180, sp. 2.

Sp. Ch.—Tail feathers twenty. Above varied with black, brown, and brownish yellow; coverts having all the feathers streaked with the latter. Beneath black; the breast white; the upper feathers with spiny shafts; the lower streaked with black; tail coverts with white tips; the sides also with much white. Length 29; wing, 11.30; tail, 11.50. Female much smaller. Iris brown.

Hab.—Sage plains of the northwest.

The *cock of the plains*, known as sage fowl in this Territory, is common on the high, barren hills and deserts east of the Cascade mountains, being limited in its range, apparently, by the growth of the bitter and turpentine-flavored *Artemesia tridentata* or "wild sage," as it is improperly called. The leaves of this shrub seem to be a principal part of its food, and the flesh tastes so strong of it that it is quite unpalatable, though white and tempting as a turkey's. We saw none of these birds north of the Spokane plains, the country being, apparently, too woody for them. On those plains they were common, for though level the surface is dry, sterile, and elevated nearly a thousand feet above the sea.

The flight of this species is more heavy and less noisy than that of most grouse, and, when they are started, commonly extends a long distance without alighting.—C.

Sage cock are abundant on the sage plains of Oregon, near Snake river, on both sides of the Blue mountains. They are also found along the line of the Columbia, on the open plains, and, again, on the sage barrens of the Yakima and Simcoe valleys, in Washington Territory, about latitude 46° and 47° north. In fact, wherever "sage" (*artemisia*) abounds this bird is found. I have dissected these grouse in situations where there was abundance of grass seeds, wild grain, grasshoppers, and other kinds of food that a person would imagine would be readily eaten by them, yet I have failed to obtain a single particle of any other article of food in their full stomachs than the leaves of the artemesia. This food must either be highly preferred, or else be essential to their existence. They seem to have the faculty of doing a long time without water, as I have found them in habitually dry, desert situations, during severe droughts, a long distance from water. The flesh of this bird is rather strong and bitter, from the nature of its food, and it also quickly decomposes after death. It, however, is very grateful to the palates of those that have been subsisting long on salt provisions.

I found this bird most abundant on the southern slope of the Blue mountains in the vicinity of Powder river. Here there are immense desert sage plains, well adapted to the species in every respect. The bird hides well, and lies close, frequently allowing a man's approach to within a few feet.

Lieutenant Fleming, of the United States army, informs me that it is found about twelve miles west of Fort Laramie, but is not seen east of that point, at least so far south. Its

geographical distribution, as far east as Milk river, Nebraska Territory, must be by following the line of the Black Hills, and eastern base of the Rocky mountains, from the South Pass northward.

In August, 1853, a sage cock was shot by a member of our party on the Milk river, two hundred miles west of Fort Union, Nebraska, and about the same distance east of the Rocky mountains. He was a fine bird, but so much injured in shooting that I did not attempt to preserve the skin, being in hopes of obtaining another. In this I was disappointed. The general hue of plumage was decidedly more red than that of those I have seen from the Oregon plains.

I observed a small flock of these birds on the plains, bordering the Milk river. In gait and actions they resembled *turkeys*, but were considerably smaller. Mr. Gibbs, in a note to me, says : "Nuttall is wrong on two points concerning the sage cock, in his appendix to the second edition of his volume on water birds. He says the 'tail is somewhat rounded,' whereas it is *sharp*. Also that it is not found east of the Rocky mountains. I have seen them near Fort Laramie on the Platte. In fact, wherever there is 'sage' (*artemesia*) you may look for sage fowls."—S.

PEDIOCAETES PHASIANELLUS, Baird.

Sharp-tailed Grouse.

Tetrao phasianellus, Linnaeus, Syst. Nat. I, ed. 10, 1758, 160. (Not in 12th edition.)—Forster, Phil. Trans. LXII, 1772, 394, 495.—Gmelin, Syst. Nat. I, 747.—Latham, Ind. Orn. II, 635.—Ord. Guthrie's Geog. 2d Amer. ed. II, 1815, 317.—Bon. Syn. 1828, 127.—Ib. Amer. Orn. III, 1828, 37; pl. xix.—Nuttall, Man. I, 1832, 669.—Aud. Orn. Biog. IV, 1838, 569; pl, 382.—Ib. Syn. 1839, 205.—Ib. Birds Amer. V, 1842, 110; pl. 298.—Newberry, Zool. Cal. & Or. Route; Rep. P. R. R. Surv. VI, iv, 1857, 94.

Tetrao (Centrocercus) phasianellus, Swainson, F. Bor. Am. II, 1831, 361.

Centrocercus phasianellus, Jardine, Game Birds, Nat. Lib. Birds, IV, 136; pl. xvi.—Bonap. Comptes Rendus, XLV, 1857, 428.

? *Phasianus columbianus*, Ord. Guthrie's Geog. 2d Am. ed. II, 1815, 317; based on the Columbia pheasant of Lewis & Clark, II, 180.

Tetrao urogallus, Var. β. Linn. Syst. Nat. ed. 12th, 273.

Pediocaetes phasianellus, Baird Gen. Rept Birds, p. 626, in which see extended synonymy.

Sp. Ch.—Tail of eighteen feathers. Colors, white, black, and brownish yellow. Above with transverse bars; the wings with round white spots. Beneath pure white, with dark V-shaped blotches on the breast and sides. Length, 18.00; wing, 8.50; tail, 5.24.

Hab.—Northern prairies and plains, from Wisconsin to Cascades of Oregon and Washington.

The same day the exploring party of Captain McClellan left the forests of the Cascade mountains, and with them the region of the ruffed and blue grouse, we met with flocks of the sharp-tailed grouse and the cock of the plains, which our western men called "prairie hen" and "sage fowl." The sharp-tail, confounded by emigrants with the pinnated grouse of the Mississippi valley, is found in this Territory only in the low alluvial prairies of the streams emptying into the Columbia east of the Cascade mountains. There we found them in flocks of several hundreds, which would start irregularly from the long grass, and after flying a few rods again light in it. When heavy frosts and snow began, near the 49th degree, they would fly to the tops of the trees in the early morning to warm themselves, often ascending to the tops of pines a hundred feet high. They shun high grounds and forests entirely, and within a distance of half a mile I have seen both this and the blue grouse (which avoids open plains altogether) as I passed from prairie to forest. The only cry I have heard them utter was a cackle when suddenly started from the ground. Their wings make a loud whirring, as among others of the genus.—C.

This bird replaces the pinnated grouse in the western country. We first noticed the species in Nebraska, near Fort Union, at the mouth of the Yellowstone river. From that point to the Cascade mountains of Oregon and Washington Territories the species is exceeding abundant wherever there is open country and a sufficiency of food. In certain places they are in great numbers in the autumn, congregating in large flocks, especially in the vicinity of patches of wild rye, and more recently near settlements where there are wheat stubbles. They resemble the pinnated grouse in habits, and are good both for the table and for sport. In places where they are numerous they may frequently be found on cold mornings in the autumn or early winter perched on fences or leafless trees, sunning themselves in the early sunlight.

At Fort Dalles, on the 1st of April, 1855, a young bird scarcely two days old was brought to me. This early incubation would lead us to suspect that the species, in favorable situations, has two or more broods during the season. The young bird above mentioned was confided to the matronly care of a hen with a young brood of chickens, but the young grouse, not understanding the kindness of its foster parent, ran and hid itself as soon as possible, and probably perished that very night from cold.

The settlers on the Upper Columbia speak of a "gray grouse," which is probably nothing else than the full-grown young of the present species in their first plumage.—S.

NOTE.—I have occasionally heard of a grouse which "turns white in winter" that is said to be found on Mount Rainier, one of the lofty snow peaks of the Cascade range. Dr. Townsend also mentions a Ptarmigan in his list of Oregon birds. All the efforts of myself and friends have thus far proved unsuccessful in obtaining a specimen.—S.

BONASA SABINII, Baird.

Oregon Grouse.

Tetrao sabinii, DOUGLAS, Trans. Linn. Soc. XVI, 1829, 137.—RICH. F. Bor. Am. II, 1831, 343.—BAIRD, Gen. Rep. Birds, p. 631.

? Tetrao umbellus, RICH. F. Bor. Am. II, 1831, 342.—NEWBERRY, Zool. Cal. & Or. Route; Rep. P. R. R. Surv. VI, iv, 1857, 94.

CH.—Tail of eighteen feathers; dark brown above; the back with cordate spots of lighter. Beneath whitish, transversely barred with brown. Tail tipped with gray, and with a subterminal bar of black. Broad feathers of the ruff black. Similar to *B. umbellus*, but much darker. Middle toe longer. Length about 18 inches; wing, 7.30; tail, 6.70.

***Hab.*—Rocky mountains to Pacific coast of Oregon and Washington; only in the timbered regions.**

The ruffed grouse, partridge, or pheasant, as it is most commonly called in this Territory, is very abundant everywhere about the borders of woods and clearings. It is common near the forests east of the Cascade mountains up to the 49th degree. These birds vary considerably in plumage there, a pale grayish hue predominating; while west of the mountains they are all of a very dark brown. There seems, however, to be no difference in their habits or cries from those of the same bird elsewhere.—C.

The western ruffed grouse is abundant in the timbered districts throughout Washington and Oregon Territories. In habits they are identical with the same bird east. Owing to the mildness of the season in the vicinity of Fort Steilacoom the males commence drumming as early as January, and in February I have heard them drumming through the *whole night*. In autumn these grouse collect in great numbers in the crabapple thickets, near the salt marshes, at the mouths of the rivers emptying into Puget Sound. Here they feed for about six weeks on the ripe fruit of the northwestern crabapple, the *Pyrus rivularis* of Nuttall.—S.

Family PERDICIDAE.—The Partridges.

OREORTYX PICTUS, Baird.

Plumed Partridge; Mountain Quail.

Ortyx picta, Douglas, Trans. Linn. Soc. XVI, 1829, 143.
Callipepla picta, Gould, Mon. Odont. pl. xv.—Newberry, Rep. P. R. R. VI, iv, 1857, 93.
Ortyx plumifera, Gould, Pr. Zool. Soc. V, 1837, 42.—Aud. Syn. 1839, 200.—Ib. Birds Amer. V, 1842, 69; pl. 291.
Perdix plumifera, Aud. Orn. Biog. V, 1839, 220; pl. 422.
Lophortyx plumifera, Nuttall, Man. I, 2d ed, 1840, 791.
Oreortyx pictus, Baird, Gen. Rep. Birds, p. 642.

Sp. Ch.—Head with a crest of two straight feathers, much longer than the bill and head. Anterior half of the body grayish plumbeous; the upper parts generally olivaceous brown, with a slight shade of rufous, this extending narrowly along the nape to the crest. Head beneath the eyes and throat orange chestnut, bordered along the orbits and a short distance behind by black, bounded anteriorly and superiorly by white, of which color is a short line behind the eye. Posterior half of the body beneath white, a large central patch (anteriorly bifurcating behind) with the flanks and tibial feathers orange chestnut brown, the sides of body showing black and white bands, the former color tinged with chestnut. Under tail coverts black, streaked with orange chestnut. Upper tertials margined internally with whitish.

Length, 10.50 inches; wing, 5; tail, 3.25.

Hab.—Mountain ranges of California and Oregon towards the coast.

The *Oregon quail*, or plumed partridge, is very rare in Washington Territory, a few small coveys only being found about Vancouver, as I was informed by the officers of the garrison in 1853. I never succeeded in finding them, though I hunted for them several times with a dog. They seem to become common south of the Columbia towards the prairies of the Willamette. I inquired especially for them in other parts of the Territory, but never heard of them. In California, south of San Francisco, this quail seems to be a rare curiosity to the market hunters, one or two sometimes occurring among flocks of the California quail, and known by the name of "mountain quail."—C.

According to Audubon and Townsend this bird inhabits Oregon. A few quail have been introduced from the Willamette valley upon the prairies back of Fort Vancouver, where, I am told, they are multiplying rapidly. A very little care at first and Washington Territory might be well stocked with these excellent game birds, as the absence of foxes west of the Cascade mountains, and the very mild, open winters generally experienced, leads us to hope that, after a fair start, they will, in all probability, never be exterminated.—S.

LOPHORTYX CALIFORNICA, Bonap.

California Quail.

Tetrao californicus, Shaw, Nat. Misc. pl. 345, (prior to 1801.)
Perdix californica, Latham, Synopsis Suppl. Ind. Orn. II, App. 1801, p. lxii.—Aud. Orn. Biog. V, 1839, 152; pl. 413.
Ortyx californica, Stephens in Shaw's Zool. XI, 1819, 384.—Jardine, Game Birds, Nat. Libr. IV, 104; pl. xi.—Cuv. R. An. Illust. ed. Oiseaux, pl. lxiv.—Bennett, Gardens & Menag. Zool. Soc. II, 29, woodcut.—Aud. Syn. 1839, 199.—Ib. Birds Amer. V, 1842, 67; pl 290.
Perdix (Ortyx) californica, Bonap, Syn. 1828, 125.
Lophortyx californica, Bonap. List, 1838.—Nuttall, Man. I, 2d ed. 1840, 789.—Baird, Gen. Rep. Birds, p. 644.
Callipepla californica, Gould, Mon. Odent. pl. xvi.—Reichenbach. Av. Syst. 1850, pl. xxvii.—Newberry, Rep. P. R. R. VI, iv, 1857, 92.

Sp. Ch.—Crest black. Anterior half of body and upper parts plumbeous; the wings and back glossed with olive brown. Anterior half of head above brownish yellow, the shafts of the stiff feathers black; behind this is a white transverse band

which passes back along the side of the crown; within this white, anteriorly and laterally, is a black suffusion. The vertex and occiput light brown. Chin and throat black, margined laterally and behind by a white band, beginning behind the eye. Belly pale buff anteriorly, an orange brown rounded patch in the middle, and white laterally, the feathers all margined abruptly with black. The feathers on the sides of body like the back, streaked centrally with white. Feathers of top and sides of neck with the margins and shafts black. Under tail coverts buff, broadly streaked centrally with brown.

Female similar, without the white and black of the head; the feathers of the throat brownish yellow, streaked with brown. The buff and orange brown of the belly wanting. The crest short.

Length, 9.50 inches; wing, 4.32; tail, 4.12.

Hab.—Plains and lowlands of California and Oregon towards the coast. Mohave river. Puget Sound, W. T. (Introduced.)

I have some doubts whether the quail found at Fort Vancouver do not belong to this species; never having examined birds from that locality, I can throw no light on the subject.

The present species, however, *does exist on the prairies near Puget Sound*, but has only been resident there since the spring of 1857, at which time, through the commendable liberality of Gov. Charles H. Mason, and of Hugh Allen Goldsborough, esq., two lots were imported from San Francisco and turned loose upon the gravelly plains near Olympia, the capital of the Territory.

I have heard subsequently only concerning the Goldsborough flock, which, consisting originally of nine individuals, of whom but four were females, had increased by the next winter to a covey of nearly a hundred individuals.

NOTE.—Mr. Geo. Gibbs writes: "The crested quail cannot be considered as an inhabitant of Washington Territory, as they are very rarely seen north of the Columbia river, and then, I believe, only at Fort Vancouver. I have never seen any east of the Cascade mountains. I met great numbers of the common California species (*L. californica*) on Russian river in 1851, and saw them again on the Klamath in 1852. They were very tame, and took to the bushes when disturbed, perching on the limbs. Like the sharp-tailed grouse they gather in large flocks. This is the case even when young, and it has been doubted whether several females do not belong to one male, and with their broods all run together.—S.

CHAPTER II.

WATER BIRDS, BY DR. G. SUCKLEY, U. S. A.

ORDER V. GRALLATORES. Wading Birds.

Family GRUIDAE. The Cranes.

GRUS CANADENSIS, (Linn.) Temm.

Sand-hill Crane; Brown Crane.

Ardea canadensis, Linn. Syst. Nat. I, 1766, 234, No. 3.—Gmelin, I, 1788, 620.—Forster, Phil. Trans. LXII, 1772, 382, No. 36. Severn river.

Grus canadensis, "Temminck." Sw. F. Bor. Am. II, 1831, 273.—Nuttal, Man. II, 1834, 38.—Bon. Consp. II, 1855, 98.—Gundlach, Cab. Jour. IV, 1856, 339.—Baird, Gen. Rep. Birds, 1858, 655.

Grus pratensis, Bartram, Travels in Florida, 1791.

Grus americana, Aud. Orn. Biog. III, 1835, 441; pl. 261.—Ib. Birds Amer. V, 1842, 188; pl. 314. (Supposed young.)

Sp. Ch.—Bill compressed. Lower manible not as deep towards the tip as the upper. Gonys nearly straight; in the same line with the basal portion of bill. Commissure decidedly curving from beyond the middle to the tip, where it is even, not crenated. Color bluish gray; the primaries and spurious quills dark plumbeous brown; the shafts white. Cheeks and chin whitish. Entire top of head (bounded inferiorly by a line from commissure along the lower eyelid) bare of feathers, warty and granulated, thinly beset with short scattered black hairs. Feathers of occiput advancing forward in an obtuse angle; the gray feathers along this point, and over the auricular region, tinged with plumbeous. Length, 48; wing, 22; tarsus, 10; commissure, 6.

Hab.—Whole of western region of United States. Florida.

Sand-hill cranes are very abundant on the Nisqually plains, Puget Sound, in autumn. They there commence to arrive from their summer breeding grounds about the last week in September, from which time until about the 10th of November, they are quite plentiful. After this they disappear; probably retiring to warmer latitudes during the cold months. In the fall they are found on *all* the prairies near Fort Steilacoom, but are not indifferent to choice of certain spots by preference. These are generally old "stubble fields," or spots of ground that have formerly been ploughed. They rise heavily and slowly from the ground upon being disturbed, and flying in circles at length acquire the desired elevation. When proceeding from one favorite resort to another, or when migrating, their flight is high, and not unfrequently their approach is heralded before they are in sight by their incessant whooping clamor. While feeding they are generally silent. The flesh of this species is excellent for the table, and, as Mr. Nuttall observes, much resembling that of the swan in flavor. A young bird, probably of this species, was brought to me in Minnesota as early as June 15. In the vicinity of Fort Steilacoom only stragglers remain to breed. During their migrations they fly in companies of from three to four individuals to several dozens. I have rarely seen them in greater numbers together; company after company succeeding each other, but rarely intermingling—keeping up, as it were, a distinct family organization.—S.

The brown crane is a common summer resident, arriving at the Straits of De Fuca in large

flocks in April, and then dispersing in pairs over the interior prairies to build their nests, which are placed among the tall fern on the highest and most open ground, where they can see the approach of danger. They frequent, at this season, the mountains to the height of 6,000 feet above the sea. The young are often raised from the nest by the Indians for food.—C.

Family ARDEIDAE. The Herons.

ARDEA HERODIAS, Linnaeus.

Great Blue Heron, or Crane.

Ardea herodias, Linn. Syst. Nat I, 1766, 237, No. 15.—Wilson, Am. Orn. VIII, 1814, 28; pl. lxv.—Bon. Obs. 1825, No. 188.—Nutt. Man. II, 1834, 42.—Aud. Orn. Biog. III, 1835, 87; V, 599; pl. 211.—Ib. Syn. 1839.—Ib. Birds Amer. VI, 1843, 122; pl. 369.—Bp. Consp. II, 1855, 112.—Baird, Gen. Rep. Birds, 1858, 668.

Large crested heron, Catesby, Car. App. pl. x.

Sp. Ch.—Lower third of tibia bare. Above bluish ash; edges of wing and the tibia rufous. Neck cinnamon brown. Head black, with a white frontal patch. Body beneath black, broadly streaked on the belly with white. Crissum white. Middle line of throat white, streaked with black and rufous. Length, 42 inches; wing, 18.50; tarsus about 6.50; bill about 5.50.

Hab.—Throughout the entire territory of the United States; West Indies.

This heron is quite abundant at Puget Sound, where it is called by the Nisqually Indians "sbuck-ah," and likewise has applied to it the nickname of "tsah-pah," or "our grandfather," probably owing to the grave dignity with which the creature struts about on the shores of its favorite feeding grounds. The Indians above mentioned have an amusing tradition concerning this bird, according to which it appears that he formerly was an Indian, who having quarreled with his wife, (the present *Podiceps cornutus*,) they were both transformed by a superior power, the man becoming a heron, the woman a dabchick. The latter was a terrible strumpet, and seems to have been especially punished for her manifold sins by *Dokweebottle*, the Nisqually Jupiter.—S.

The great blue heron is abundant throughout the year near the coast, and near the mouth of the Columbia I have seen flocks of two hundred in August, which had congregated to devour the herring, common at that season. They build also in high trees near the same place.—C.

BOTAURUS LENTIGINOSUS, (Montagu,) Stephens.

Bittern; Stake-driver.

Ardea lentiginosa, Montagu, Orn. Dict. Suppl. 1813.—Jenyns, Man. 191 —Aud. Syn. 1839, 262.—Ib. Birds Amer. VI, 1843, 94; pl. 365.—Sw. F. Bor. Am. II, 1831, 374.

Botaurus lentiginosus, Steph, Shaw's Gen. Zool. XI, 1819, 596.—Baird, Gen. Rep. Birds, 674.

Ardea (Botaurus) lentiginosa, Nutt. Man. II, 1834, 60.

Ardea minor, Wilson, Am. Orn. VIII, 1814, 35; pl. lxv.—Bon. Obs. 1825, 186.—Aud. Orn. Biog. IV, 1838, 296 pl. 337.

Botaurus minor, Bonap. List, 1838.—Ib. Consp. II, 1855, 136.—Gundlach, Cab. Journ. IV, 1856, 346.

Sp. Ch.—Brownish yellow, finely mottled and varied with dark brown and brownish red. A broad black stripe on each side the neck, starting behind the ear. Length, 26. 50; wing, 11. 00; tarsus, 3. 60; bill above, 2. 75.

Hab.—Entire continent of North America.

Rather widely distributed. One specimen obtained in the Rocky mountains at Fort Owen,

in the St. Mary's valley, W. T.; one seen in San Francisco; and another was preserved by me which was killed on Puget Sound. As far as my observation proves, it is not a common bird on the northwest coast.

The specimen obtained by me at Fort Steilacoom is now contained in the Smithsonian collection, numbered 9468. The bill of this bird was *yellowish green*, dusky above. Feet and legs yellowish green.—S.

NYCTIARDEA GARDENI, (Gmel.) Baird.

Night Heron.

Ardea gardeni, Gmelin, I, 1788, 644.

Nycticorax gardeni, "Jard." Bonap. Consp. II, 1855, 141.

Ardea nycticorax, Wilson, Am. Orn. VII, 1813, 101; pl. lxi.—Bon. Obs. Wils. 1825, No. 193.—Aud. Orn. Biog. III, 1835, 275: V, 600; pl. 236.—Ib. Syn. 261.—Ib. Birds Amer. VI, 1843, 82; pl. 363.

Ardea (Botaurus) discors, Nutt. Man. II, 1834, 54.

Nyctiardea gardeni, Baird, Gen. Rep. Birds, 678.

Sp. Ch.—Head above and middle of back steel green. Wings and tail ashy blue. Under parts, forehead, and long occipital feathers, white. Sides tinged with lilac. Length, about 25 inches; wing, 12.50; tarsus, 3.15; bill above, 3.10.

Hab.—United States generally.

This bird is mentioned by Dr. Townsend as inhabiting Oregon. While on Puget Sound I have several times thought that I recognized its cry during the night time. These sounds, whatever it was that produced them, occasioned much fright among the Indians, who believe that the creature that utters them has the power of transforming human beings into inferior animals. They have also several traditions and superstitious stories concerning this, to them, horrible bird. I was unable to obtain a specimen of it during my stay in that region, but upon my arrival in San Francisco I found that it was quite abundant on the Pacific coast, and one or more specimens are contained in every collection of birds I inspected in that city. Several of these were in most elegant condition of plumage, the pendant white pencillated feathers of the head, characteristic of the species, being, in several specimens, from six to nine inches in length.—S.

I have not met with the night heron in this Territory, though, as it is common in California, it probably migrates to the Columbia river, where Townsend seems to have found it.—C.

Family CHARADRIDAE. The Plovers.

CHARADRIUS VIRGINICUS, Borck.

Golden Plover; Bull-head.

Charadrius pluvialis, Wilson, Am. Orn. VII, 1813, 71; pl. lix.—Sw. F. Bor. Am. II, 1831, 623.—Nuttall, Man. II, 1834, 16.—Aud. Orn. Biog. III, 1835, 623. (Not of Linnæus.)

Charadrius virginicus, "Borckhausen and Bechstein." Licht. Verz. Doubl 1823, No. 729.—Baird & Cassin, Gen. Rep. Birds, 690.

Charadrius marmoratus, Wagler, Syst. Av. 1827, No. 42.—Aud. Orn. Biog. V, 1839, 575; pl. 300.—Ib. Syn. 222.—Ib. Birds Am. V, 1842, 203; pl. 316.

Figures.—Wilson, Am. Orn. VII, pl. 59, fig. 5.—Aud. B. of Am. pl. 300, Oct. ed. V, pl. 316.—Meyen, Nova Acta, XVI, Supp. pl. 18.

Sp. Ch.—Bill rather short, legs moderate, wings long, no hind toe, tarsus covered before and behind with small circular or hexagonal scales. Upper parts brownish black, with numerous small circular and irregular spots of golden yellow, most

numerous on the back and rump, and on the upper tail coverts, assuming the form of transverse bands, generally ; also with some spots of ashy white. Entire under parts black, with a brownish or bronzed lustre, under tail coverts mixed or barred with white. Forehead, border of the black of the neck, under tail coverts and tibiæ, white ; axillary feathers cinereous ; quills, dark brown ; middle portion of the shafts white, frequently extending slightly to the webs and forming longitudinal stripes on the shorter quills ; tail dark brown, with numerous irregular bands of ashy white, and frequently tinged with golden yellow ; bill, black ; legs, dark bluish brown. *Younger.*—Under parts dull ashy, spotted with brownish on the neck and breast, frequently more or less mixed with black ; many spots of the upper part dull ashy white ; other spots, especially on the rump, golden yellow.

Total length about 9½ inches ; wing, 7 ; tail, 2½ inches.

Hab.—All of North America, South America, Northern Asia, Europe.

Early in October, 1853, I found the golden plover quite abundant in the St Mary's valley, at the western base of the Rocky mountains. They were then found scattered in small flocks upon the plains near the junction of the Bitter Root and Hell-Gate streams, which had recently been burnt over by the spreading fires so commonly started either by accident or design by the wild natives of the far west.

The birds were remarkably unsuspicious and tame, and although frequently shot at were but little alarmed. Those that I killed were very fat, and in excellent condition for the table. I never saw this species near the coast in Washington or Oregon, and presume that, if found there, it is only accidental.

In the collections in San Francisco I saw several birds of this species, which had probably been obtained in the public markets of that city.—S.

AEGIALITIS VOCIFERUS, (Linn.) Cassin.

Kill-deer.

Charadrius vociferus, Linn, Syst. Nat. I, 1766, 253.—Wils. Am. Orn. VII, 1813, 73 ; fig. pl. lix.—Nut. Man. II, 22.—Aud. Orn. Biog. III, 1835, 191 : V, 577 ; pl. 225.—Ib. Syn. 222.—Ib. Birds, Am. V. 1842, 207, pl. 317.

Aegialtes vociferus, Bon. List, 1838.

Aegialitis vociferus, Baird and Cassin, Gen. Rep. Birds, 692.

Figures.—Catesby's Carolina, Birds, pl. 71.—Buff. Pl. Enl. 286.—Wilson's Am. Orn. VIII, pl. 59, fig. 6.—Aud. B. of Am. pl. 225, oct. ed. V. pl. 317.

Sp. Ch.—Wings long, reaching to the end of the tail, which is also rather long. Head above and upper parts of the body light brown with a greenish tinge, rump and upper tail covers rufous, lighter on the latter. Front and lines over and under the eye, white, another band of black in front above the white band ; stripe from the base of the bill towards the occiput, brownish black ; ring encircling the neck and wide band on the breast, black ; throat white, which color extends upwards around the neck ; other under parts white. Quills brownish black with about half of their inner webs white, shorter primaries with a large spot of white on their outer webs, secondaries widely tipped or edged with white. Tail feathers pale rufous at base ; the four middle light olive brown tipped with white, and with a wide subterminal band of black ; lateral feathers widely tipped with white. Entire upper plumage frequently edged and tipped with rufous. Very young have upper parts light gray, with a longitudinal band on the head and back black ; under parts white. Total length about 9½ inches, wing, 6½ ; tail, 3½ inches.

Length of a Rocky mountain specimen, 10. 75 inches ; extent 20. 75 ; bill black ; feet yellow.

Hab.—North and South America.

This plover is a common species in Minnesota, Oregon, and Nebraska Territories, breeding in summer throughout this immense range. In winter they are sparingly found about Puget Sound, as in the east, seemingly preferring the beaches and sand pits near salt water during the cold months. The greater number of individuals, however, retire in the fall to the south; not returning to the vicinity of the sound until about the end of April. They then repair in

great numbers to the small fresh water ponds in the vicinity of Fort Steilacoom, where they remain during the summer and rear their young. This proverbially noisy, restless bird retains all the peculiar habits on the Pacific that so distinguish it in other localities.—S.

The kill-deer plover is a common summer resident in the interior of the Territory, arriving at Puget Sound early in May, and remaining until October, raising its young during the season. I have never seen this species on the coast.—C.

AEGIALITIS MONTANUS, (Towns.) Cassin.

Rocky Mountain Plover.

Charadrius montanus, Towns, J. A. N. Sc. VII, 1837, 192.—Ib. Narr. 1839, 349.—Aud. Orn. Biog. IV, 1838, 362; pl. 350.—Ib. Syn. 223.—Ib. Birds Am. V, 1842, 213; pl. 318.

Aegialtes montanus, Bon. List, 1838.

Aegialitis montanus, Baird and Cassin, Gen. Rep. Birds, 693.

Sp. Ch.—Forehead, stripe over the eye, and entire under parts, white, generally tinged with dull yellowish and ashy on the breast. Another band of black in front above the white band; back of the neck and sides dull brownish fulvous; other upper parts ashy brown, usually with many feathers edged and tipped with fulvous or rufous; upper tail coverts lighter. Quills dark brown, with their shafts white, tail brown with a wide subterminal band of brownish black and tipped with white. Shorter primaries with a white space on their outer webs, forming a patch of white on the wing; under wing coverts and axillary feathers pure silky white. Bill black, legs yellow. Younger, without the black band in front, and with the white band tinged with dull yellow, entire upper parts with the feathers edged and tipped with dull ashy rufous. Total length, about 9 inches; wing, 6; tail, 3 inches.

Hab.—Western North America.

I obtained a specimen of this bird, shot in a "prairie dog town" on Milk river, Nebraska, and have reason to believe that it is found in southern California and New Mexico. Not observed by me in Washington or Oregon. Perhaps it may be found in summer in the interior of southern Oregon towards Utah. The habits of the bird I obtained in Nebraska seem somewhat to resemble those of the golden plover in apparently preferring dry open ground.

I also saw a stuffed specimen in the collection of F. Gruber, San Francisco.—S.

AEGIALITIS SEMIPALMATUS, (Bon.) Cab.

Ring Plover; Semi-palmated Plover.

Charadrius semipalmatus, Bon. Obs. Wils. 1825, No. 219.—Ib. Syn. 1828, 296.—Ib. Am. Orn. IV, 1832, 92; pl. xxv.—Nuttall, Mann. II, 24.—Sw. F. B. Am. II, 1831, 367.—Aud. Orn. Biog. IV, 1838. 256; N, 579; pl. 330.—Ib. Syn. 224.

Aegialitis semipalmatus, Cab. Cab. Journ. 1856, 425.—Baird and Cassin, Gen. Rep. Birds, 694.

Tringa hiaticula, Wilson, Am. Orn. VII, 1813, 65; pl. lix.

Figures.—Wilson, Am. Orn. VII, pl. 59, fig. 3.—Aud. B. of Am. pl. 330; oct. ed. V. pl. 320.—Bonap. Am. Orn. IV, pl. 25, fig. 4.

Sp. Ch.—Small, wings long, toes connected at base, especially the outer to the middle toe. Front, throat, ring around the neck, and entire upper parts, white, a band of deep black across the breast, extending around the back of the neck below the white ring. Band from the base of the bill, under the eye, and wide frontal band above the white band, black. Upper parts light ashy brown, with a tinge of olive; quills brownish black, with their shafts white in a middle portion, and occasionally a lanceolate white spot along the shafts of the shorter primaries; shorter tertiaries edged with white; lesser coverts tipped with white. Middle feathers of the tail ashy olive brown, with a wide subterminal band of brownish black, and narrowly tipped with white; two outer tail feathers white, others intermediate, like the middle, but widely tipped with white. Bill orange yellow, tipped with black; legs yellow. Female similar, but rather lighter colored. Young without the black band in front, and with the band across the breast ashy brown.

Total length, about 7 inches; extent, 15½; wing, 4¾; tail, 2¼ inches; iris, brown; bill, orange and black; feet, black.

Hab.—The whole of temperate North America. Common on the Atlantic.

The ring plover passes through along the sea-coast of the Territory when migrating in the

months of April and October. It associates with the small sandpipers along the shores of the bays and estuaries, and though apparently feeding on the same food, it picks it up on the surface of the ground instead of probing in the mud or sand.—C.

SQUATAROLA HELVETICA, (Linn.) Cuv.

Swiss Plover; Black-bellied Plover.

Tringa helvetica, Linn. Syst. Nat. I, 1766, 250.

Squatarola helvetica, Cuv. R. A. 1817. Baird & Cassin, Gen. Rep. Birds, 697.

Charadrius helveticus, Licht. Verz. 1827, No. 728.—Aud. Orn. Biog. IV, 1838, 280; pl. 324.—Ib. Syn. 421.—Ib. Birds Amer. V. 1842, 199; pl. 315.

Tringa squatarola, Linn. Syst. Nat. I, 1766, 252.

Charadrius apricarius, Wilson, Am. Orn. VII, 1813, 41.

Figures.—Buffon, Pl. Enl. 853, 854, 923.—Wilson, Am. Orn. VII, pl. 57, fig. 4.—Aud. B. of Am. pl. 334; oct. ed. V. pl. 315.—Naumann, B. of Germany, pl. 178.—Gould, B. of Eur. IV, pl. 290.

Sp. Ch.—Bill and legs strong; wings long; a very small rudimentary hind toe. Around the base of the bill to the eyes, neck before and under parts of body, black; upper white, nearly pure and unspotted on the forehead; sides of the neck and rump tinged with ashy, and having irregular transverse bars of brownish black on the back, scapulars and wing coverts; the brownish black frequently predominating on those parts, and the rump also frequently with transverse bars of the same. Lower part of the abdomen, tibia, and under tail coverts, white. Quills brownish black, lighter on their inner webs, with a middle portion of their shafts white, and a narrow longitudinal stripe of white frequently on the shorter primaries and secondaries. Tail white, with transverse imperfect narrow bands of black. Bill and legs black. The black color of the under parts generally with a bronzed or coppery lustre, and presenting a scale-like appearance; the brownish black of the upper parts with a greenish lustre. *Younger and winter plumage.*—Entire upper parts dark brown, with circular and irregular small spots of white, and frequently of yellow, most numerous on the wing coverts; upper tail coverts white. Under parts white, with short longitudinal lines and spots dark brownish cinereous on the neck and breast; quills brownish black, with large longitudinal spots of white on their inner webs, and also on the outer webs of the shorter primaries. *Young.*—Upper parts lighter, and with the white spots more irregular or scarcely asuming a circular shape; narrow lines on the neck and breast more numerous. Length, 11.50 to 12.50; extent, 24.25 to 25.00; wing, 7.25 to 9.75; tail, 3 inches. Iris brown, bill black; feet lead color.

Hab.—All of North America. The seacoasts of nearly all countries of the world.

The black-bellied or Swiss plover I found moderately abundant in Minnesota, and also sparingly on the sand spits and beaches along the Straits of Fuca, in Washington Territory. In the latter vicinity I obtained several specimens in the early part of March, 1856.

Owing to the general mildness of the winters in the last mentioned locality, a few generally remain throughout the season, where, in company with the turnstone and the active little three-toed sandpiper, they may, any fine day during the colder months, be found industriously seeking their favorite food at the edges of the retiring waves. In the spring and fall they are quite common in the San Francisco markets.—S.

The Swiss plover seems to be a resident bird in small numbers, as I shot young birds in July near the mouth of the Columbia river, together with the young of several other species of shore birds. During the coldest winter weather I also observed them in greater numbers, but never in flocks of more than a dozen.—C.

Family HAEMATOPODIDAE.—The Oyster Catchers.

HAEMATOPUS NIGER, Pallas.

Bachman's Oyster Catcher.

Haematopus niger, PALLAS, Zoog. Rosso-Asiat. II, 1811, 131.—BAIRD & CASSIN, Gen. Rep. Birds, 701.

Haematopus bachmani, AUD. Orn. Biog. V. 1839, 245; pl. 427.—IB. Syn. 229.—IB. Birds Amer. V., 1842, 243; pl. 325.—TOWNSEND, Narr. 1839, 348.

SP. CH.—Rather smaller than the preceding; bill rather more slender, wings long; legs robust; tarsi covered with ovate scales; tail short. Head and neck brownish black, with a glaucous or ashy tinge in very adult specimens. All other parts of the plumage, above and below, dark brown, rather darkest on the rump; bill bright red; legs pale reddish, nearly white.

Total length, about 17 inches; wing, 10½; tail, 4½; bill to gape, 3¼; tarsus, 2 inches.

Hab.—Western coast of the United States. Kurile islands, (Pallas.)

Bachman's oyster catcher was obtained by Dr. Townsend from the northwest coast, having been presented to him by William Fraser Tolmie, esq., at that time surgeon to the honorable Hudson Bay Company, and at present a chief factor and "resident partner" in that wealthy corporation.

Dr. Tolmies' kindness and interest in furthering the wishes of naturalists both of this country and of Europe have been already mentioned by me in my notes on the *Trichas McGillivrayi*.

Oyster catchers are common in the Rocky islands and points near Victoria, Vancouver's Island, and upon the Rock islands and reefs of the Canal d'Arro and the Straits of Fuca. I have not yet succeeded in obtaining specimens, but have been promised some by friends residing in that vicinity.—S.

I cannot be certain that the above species inhabits the Territory, as the description appears to differ from those observed there by Mr. Gibbs and myself in having *pale red*, instead of blood red legs.

The only locality where I have seen the oyster catcher is the northern shore of Whidby's island, at the Straits of De Fuca. A single one frequented that place in April, feeding among the sea weeds on a rocky shore, which are so nearly like it in color that it can with difficulty be seen at a little distance. This bird was very shy, and I could get no chance to shoot it. On the opposite shores of Vancouver's Island I heard that they were abundant in summer.

When flying over the water from one point to another it makes a wide semi-circle, keeping far from the shore. On starting it utters a loud whistling cry.—C.

STREPSILAS INTERPRES, (Linn.) Ill.

Turnstone.

Tringa interpres, LINN. Syst. Nat. I, 1766, 248.—WILS. Am. Orn. VII, 1813, 32; pl. lvii.

Strepsilas interpres, ILLIGER, Prod. 1811, 263.—SW. F. Bor. Am. II, 1831, 371.—NUTT. II, 30.—AUD. Orn. Biog. IV, 1838, 31; pl. 304.—IB. Syn. 227.—IB. Birds Amer. V, 1842, 231; pl. 323.—BAIRD & CASSIN, Gen. Rep. Birds, 701.

FIGURES.—Buff. Pl. Enl. 856.—Vieill. Gal. II, pl. 237.—Wilson, Am. Orn. VII, pl. 57, fig. 1.—Aud. B. of Am. pl. 304; oct. ed. V, pl. 323.

SP. CH.—Upper parts rather irregularly variegated with black, dark rufous, and white. Head and neck above generally white, with numerous spots and stripes of brownish black on the crown and occiput; space in front of the eye white, usually surrounded with black; throat white, on each side of which is a stripe of black running from the base of the bill downwards and joining a large space of the same color (black) on the neck and breast. Abdomen, under wing coverts, under tail

coverts, back and rump, white. Quills brownish black, with their shafts white ; tail white at base, with its terminal half brownish black, and tipped with white. Greater wing coverts widely tipped with white, forming a conspicuous oblique bar across the wing ; bill black ; legs orange. In winter the black of the upper parts is more apparent, and the rufous is of less extent and of lighter shade.

Total length, about 9 inches ; extent, 18.75 ; wing, 6 ; tail, 2½ inches. Iris brown ; bill and feet black.

Hab.—Shores of the Atlantic and Pacific, throughout North America. One of the most widely diffused of birds, being found in nearly all parts of the world.

The turnstone passes through along the coast of the Territory on its northern migration in May, clad in its beautiful summer dress; and in September returns southward in its plain chocolate plumage. Some, perhaps, remain during winter about the shores of Puget Sound.—C.

STREPSILAS MELANOCEPHALUS, Vigors.

Black Turnstone.

Strepsilas melanocephalus, Vigors, Zool. Jour. IV, Jan. 1829, 356.—Ib. Zool. Blossom, 1839, 29. —Gambel, J. A. N. Sc. 2d series, Aug. 1849, 220.—Baird & Cassin, Gen. Rep. Birds, 702

Sp. Ch.—About the size of and having the same general form as the preceding, but differing in color. Head, breast, and upper parts of the body fuliginous brown, lighter on the breast, and with every feather having a darker centre ; back and wing coverts darker, frequently nearly black and with a greenish lustre ; lower part of back, rump, and upper tail coverts white, with a large spot of black on the upper coverts. Abdomen, under tail and under wing coverts white ; tips of greater wing coverts white, forming a band across the wing ; shorter tertiaries edged externally white. Bill black ; feet dark orange. Quills brownish black, with their shafts white ; tail at base white, with its terminal half black, narrowly tipped with white.

Total length, about 9 inches ; wing, 6 ; tail, 2½ inches ; extent, 18.75.

Hab.—Western North America.

Birds belonging to one or the other of these species are very common in autumn and spring on the sand spits and rocky points of Puget Sound and the Straits of Fuca. They arrive from the north at the same time as the *Lobipes hyperboreus*, about August 20. The bulk of the migration passes to the south before cold weather comes on, although a few remain throughout the winter. I have shot them along the shores of the Straits of Fuca during the months of January, February, and March.

They are very abundant in October, on a small rock island nearly opposite *Seattle*, Puget Sound, where they congregate in immense numbers. I found them usually fat, and comparing favorably with the tattlers and sandpipers as articles of food. They are not a shy bird, and when plentiful are easily obtained, frequently several individuals being killed at one discharge. During the cold months they keep in small companies, feeding busily, like the sandpipers, at the edge of the water, and when disturbed flying to a short distance from the intruder, when again alighting, they eagerly recommence a busy search for their favorite food.—S.

Family RECURVIROSTRIDAE—The Avosets.

RECURVIROSTRA AMERICANA, Gm.

American Avoset.

Recurvirostra americana, Gm. Syst. Nat. I, 1788, 693.—Wils. Am. Orn. VII, 1813, 126.—Sw. F. Bor. Am. II, 1831, 375.—Nutt. Man. II, 78.—Aud. Orn. Biog. IV, 1838, 168 ; pl. 318.—Ib. Syn. 252.—Ib. Birds Amer. VI, 1843, 247 ; pl. 353.—Baird & Cassin, Gen. Rep. Birds, 703.

Recurvirostra occidentalis, Vigors, Zool. Jour. IV, 1829, 356.—Ib. Zool. Blossom, 1839, 28 ; pl. xii.—Wagler, Isis, 1831, 520.—Baird, Zool. Stansbury, Salt Lake, 1852.—Cassin, Illust. I, viii, 1855, 232, pl. xl.

Bowen & Cº Lith. & Col. Philada

STREPSILAS MELANOCEPHALA.

FIGURES.—Wilson, Am. Orn. VII, pl. 63, fig. 2. Aud. B. of Am. pl. 318; oct. ed. vi; pl. 353. Latham, Synopsis, V, pl. 92. Cassin, B. of Cal. and Texas, pl. 40. (Young.)

SP. CH.—Bill rather long, depressed; wings long; legs long; tarsi compressed; tail short *Adult:* Head and neck pale reddish brown, darker on the head and fading gradually into white. Back, wing coverts, and quills, black; scapulars, tips of greater wing coverts, rump and tail, and entire under parts, white; the last frequently tinged with reddish. Bill brownish black, legs bluish. *Young:* Very similar to the adult, but with the head and neck white, frequently tinged with ashy on the head and neck behind. Total length, 13.12 to 18 inches; wing, 8½ to 9; extent, 28 to 31; tail, 3½; bill to gape, 3¾; tarsus, 3½ inches.

Hab.—All of temperate North America; Florida, (Mr. Würdemann.)

During my residence in the northwest I obtained but one specimen of the American avoset, which was afterwards, unfortunately, lost on its way to Washington. This bird appeared to be a straggler, and was shot near Fort Walla-Walla, where it excited a good deal of surprise among some of the older settlers and traders, to all of whom it was new. In western Minnesota, on the contrary, it is very abundant, especially in the saline region along the tributary streams of the Shayenne river and among the salt lakes and pools of the Grande Coteau There, where I had a good opportunity of studying their habits, I found that they appeared equally fond of the margins of *running brooks* and the edges of stagnant pools; partly resembling ducks in swimming well upon the surface of the water, and partly the Totani in running along the shore and in wading into the water in search of food. They were very unsophisticated, allowing a near approach, and were but little disturbed by the report of a gun. When alarmed at all, they manifested it much as curlews and willets do, by circling around the intruder, flying backwards and forwards, all the while vociferating loudly. At such times, like the birds mentioned, they can be "tolled" towards the shooter by whistling in imitation of their cry. I have seen a specimen of the avoset in the San Francisco Academy's museum, which had been obtained in California. It is not a common bird in Oregon, the one received being the only specimen I ever heard of in the Territory. In the Salt Lake region they are not uncommon, (*vide* Stansbury's Report,) and this, added to the fact of their great abundance among the salt lakes of *western* Minnesota, (the present Territory of Dacotah,) seems to indicate a decided preference for such food as is found only in salt and brackish water. My Oregon specimen was much darker than any obtained in Minnesota, a reddish cinnamon tinge being very strongly marked upon the neck. Although I shot many individuals in western Minnesota, I never saw one among them so darkly tinged as the Oregon specimen.

Nuttall says, in a note: "A second species, with a *white* instead of a rufous neck, head, and breast, and very nearly allied, if not identic, with the European or Oriental avoset, was shot near to the Great Northern Bend of the Missouri, and is now, I believe, in the extensive museum of the Right Honorable Lord Stanley, at Knowsley Hall."—Nuttall's Manual, 1st ed. Water Birds, p. 77.

The *Great Bend of the Missouri*, it should be remembered, is very near to the saline region of Dacotah. Probably, however, this bird was simply a specimen of the present species in immature plumage, unless we differ from Mr. Cassin, and admit the existence of *R. occidentalis* as a distinct species.—S.

Common on the Platte river, Nebraska, where I obtained, in August, two specimens, having characters intermediate between *R. americana* and *R. occidentalis*. Never seen by me on the west coast.—C.

Family PHALAROPODIDAE.—The Phalaropes.

PHALAROPUS HYPERBOREUS, (Linn.) Temm.

Northern Phalarope.

Tringa hyperborea, Linn. Syst. Nat. I, 1766, 249.
Lobipes hyperboreus, "Cuv. R. A."—Bon. List, 1838.—Aud. Syn. 1839, 240.—Ib. Birds Amer. V, 1842, 295; pl. 340.
Phalaropus hyperboreus, Temm. Man. II, 1820, 709.—Aud. Orn. Biog. III, 1835, 118: V, 595; pl. 215.—Baird & Cassin, Gen. Rep. Birds, 706.

Figures.—Buff. Pl. Enl. 766.—Edwards, Birds, III, pl. 143, 46, 308.—Aud. B. of Am. pl. 254; oct. ed. V, pl. 340.

Sh. Ch.—Bill short, straight, pointed; wings long; tail short; legs short. *Adult:* Neck encircled with a ring of bright ferruginous, and a stripe of the same on each side; head above and neck behind sooty ash; back, wings, and tail, brownish black, paler on the rump, mixed with bright ferruginous on the back. Tips of greater wing coverts white. Sides and flanks ashy, frequently mixed with reddish; throat, breast, and abdomen white; bill and legs dark. *Young:* Entire upper parts brownish black; many feathers edged and tipped with dull yellow and ashy; under parts white; tips of greater wing coverts white. Total length, 7 to 8 inches; extent, 13½ to 14; wing, 4½; tail, 2¼; bill, 1; tarsus, ¾ inch. Female smallest. Iris brown; legs bright slate color; bill black.

Hab.—The whole of temperate North America, Europe, Japan, (Mr. Heine, Japan Exp.) San Francisco, California, (Mr. Cutts.)

The lobefoot passes in spring and fall through the Territory in small flocks, which associate sometimes with the sandpipers, but seem to prefer wetter feeding grounds, wading in the shallow creeks at low tide, and even swimming in the ocean several miles off shore. In August, 1853, I saw a pair either of this or the next species swimming on a small lake on the summit of the Cascade mountains, where they probably had a nest. The young birds appear near the mouth of the Columbia as early as July.—C.

Several specimens of this species I obtained on Puget Sound and Admiralty inlet in August, 1856. About the middle of the latter month individual birds arrive from the north, and towards its close become quite abundant on the sound. They there seem to feed and live principally among beds of kelp and floating patches of dead sea-weed, being rarely seen on the shore. They swim well, and take wing very readily from the water. In the locality just mentioned they are not at all shy, but are readily approached and shot.—S.

PHALAROPUS FULICARIUS, (Linn.) Bon.

Red Phalarope.

Tringa fulicaria, Linn. Syst. Nat. I, 1766, 249.
Phalaropus fulicarius, Bon. Obs. Wils. 1825, 232.—Ib. Syn. 1828, 341.—Swainson, F. Bor. Amer. II, 1831, 407.—Nutt. Man. II, 236.—Aud. Orn. Biog. III, 1835, 404; pl. 255.—Ib. Syn. 239.—Ib. Birds Amer. V, 1842, 291; pl. 339.—Baird & Cassin, Gen. Rep. Birds, 707.

Figures.—Edwards, Birds, III, pl. 142.—Wilson, Am. Orn. IX, pl. 73, fig. 4.—Aud. B. of Am. pl. 255; oct. ed. V, pl. 339.

Sp. Ch.—Bill strong, flattened, widened towards the end; wings long; tail short; legs short; plumage thick and compact, like the swimming birds. *Adult:* Head above, space around the base of the bill, throat, and back, brownish black, feathers of the last edged broadly with pale ochre yellow; wings and tail ashy brown, paler on the wing coverts; greater wing coverts widely tipped with white; stripe on the cheek white. Entire under parts deep brownish red, inclining to purple on the abdomen, and with a glaucous cast in very mature specimens; under wing coverts and axillaries pure white; bill greenish yellow; feet dark bluish brown. *Young:* Entire upper parts light cinereous; head above and wings darker, and mixed with blackish brown; head in front, and entire under parts, white; tips of greater wing coverts white. Total length, from 7½ to 8¾ inches; extent, 16; wing, 5¼; tail, 2¾; bill, 1; tarsus, ¾ inch. Iris dark brown; bill and feet black.

Hab.—Entire temperate regions of North America; Asia; Europe.

I never observed but *two* red phalaropes in Washington Territory, and those late in November appeared during a storm in Shoalwater bay, where they swam in the surf near shore picking at small crustacea washed out of the sand. They seemed much more aquatic in their habits than the preceding, and I am inclined to think that the birds seen in large flocks off the coasts of California and Mexico in winter are of this species.—C.

Family SCOLOPACIDAE.—The Snipes.

Sub-Family SCOLOPACINAE.—Short-legged Snipe.

GALLINAGO WILSONII, (Temm.) Bon.

Wilson's Snipe; English Snipe.

Scolopax wilsonii, Temm. Pl. Col. V, livraison lxviii, about 1824. In text of *Scolopax gigantea.*—Bon. Syn. 1828, 330.—Swains. F. B. Am. II, 1831, 401.—Nutt. Man. II, 185.—Aud. Orn. Biog. III, 1835, 322 : V, 1839, 583; pl 243.—Ib. Syn. 248.—Ib. Birds Amer. V, 1842, 339 ; pl. 350.

Gallinago wilsonii, Bonap. List, 1838 —Baird & Cassin, Gen. Rep. Birds, 710.

Scolopax gallinago, Wils Am. Orn. VI, 1812, 18. Not of Linnaeus.

Scolopax delicata, Ord, ed. Wils. IX, 1825, 218.

? Scolopax drummondii, Sw. F. Bor. Am. II, 1831, 400.—Aud. Orn. Biog. V, 1839, 319.—Ib. Syn. 249.—Ib. Birds Amer. V.

? Scolopax douglassii, Sw. F. Bor. Am. II, 1831, 400.

? Scolopax leucurus, Sw. F. Bor. Am. II, 1831, 50.

Sp. Ch.—Bill long, compressed, flattened and slightly expanded towards the tip, pustulated in its terminal half; wings rather long ; legs moderate ; tail short. Entire upper parts brownish black ; every feather spotted and widely edged with light rufous, yellowish brown or ashy white ; back and rump transversely barred and spotted with the same ; a line from the base of the bill over the top of the head. Throat and neck before, dull reddish ashy ; wing feather marked with dull brownish black ; other under parts white, with transverse bars of brownish black on the sides, axillary feathers and under wing coverts and under tail coverts ; quills brownish black ; outer edge of first primary white ; tail glossy brownish black, widely tipped with bright rufous, paler at the tip, and with a subterminal narrow band of black ; outer feathers of tail paler, frequently nearly white and barred with black throughout their length. Bill brown, yellowish at base and darker towards the end ; legs dark brown.

Male: length, 10 to 10.50 ; extent, 16. *Female:* length, 11 ; extent, 17 inches ; wing, 5 ; tail, $2\frac{1}{4}$; bill, $2\frac{1}{2}$; tarsus, $1\frac{1}{4}$ inch. Feet pale greenish gray.

Hab.—Entire temperate regions of North America. California, (Mr. Szabo.)

Wilson's snipe is generally distributed throughout all such portions of Oregon and Washington where nature has provided them with suitable abiding places. Many remain in the vicinity of Puget Sound throughout the winter, unless it be unusually cold. This is not surprising when we consider the mild open character of the winter of the coast region of those Territories, which, unlike the hard, cold season of places on the Atlantic coast of the same northern latitude, is what might be properly termed *a rainy season.*

Further in the interior they are found, and a few winter near Fort Dalles, on the Columbia. In that vicinity I found several individuals on a cold day in the winter of 1854–'55 who had retreated from their ordinary haunts—owing to the frozen condition of the surface of the ground and a slight fall of snow—and were then busy close to the edge of an open running brook, running along the line where the snow had been melted by the ripples of the water, and feeding and acting at the time much like sandpipers—having been thus driven by sheer necessity to an almost complete abandonment of their ordinary habits. It is probable that had the change in the weather been less sudden, these birds would have migrated further south;

but as it was they were taken unawares, and reduced to great straits by cold and starvation. In habits, voice, and general appearance, this species on the west coast retains all the individual characteristics noted in eastern birds. This fact, together with the total absence of any skins in the Smithsonian collection, indicating the existence of another species of this genus in our northwest, leads me to judge, with Mr. Cassin, that there is but little probability that either the so-called S. Drummondii, or the S. Douglassii, exist in nature. A few remain and breed during the summer in the neighborhood of Puget Sound, but the greater portion retire to the north for that purpose. Near Fort Steilacoom they are abundant in spring and fall on the marshes around the small lakes in that vicinity, and also in the thicket-covered swamps near the mouths of the Nisqually, Puyallup, and other rivers.—S.

The American snipe is not uncommon in the Territory during the migrating season, and I think a few remain throughout mild winters, but most of this species seem to go on at once to the plains of California, where I saw them in immense numbers in November. In habits, flight, and the peculiar quacking cry when startled, they precisely resemble the same bird near the Atlantic. I saw them near the Columbia in August.—C.

MACRORHAMPHUS GRISEUS, (Gmelin,) Leach.

Gray Snipe; Red-breasted Snipe.

Scolopax grisea, Gmelin, Syst. Nat. I, 1788, 658, No. 27.

Macrorhamphus griseus, "Leach, Catal. Brit. Mus. 1816, 31."—Stephens, Shaw. Gen. Zool. XII, 1824, 61.—Bon. Am. Orn. IV, 1832, 51; pl. xxiii.—Baird & Cassin, Gen. Rep. Birds, 712.

Scolopax noveboracensis, Gm. Syst. Nat. I, 1788, 658, No. 28.—Wilson, Am. Orn. VII, 1813, 45; pl. lviii.—Sw. F. Bor. Am. II, 1831, 398.—Aud. Orn. Biog. IV, 1838, 288; pl. 339.—Ib. Syn. 249.—Ib. Birds Amer. VI, 1843, 10; pl. 351.

Sp. Ch.—Rather smaller than the preceding; bill long, compressed, flattened and expanded towards the end, and in the same space punctulated and corrugated; wing rather long; shaft of first primary strong; tail short; legs rather long. *Adult:* Upper parts variegated with dark ashy, pale reddish and black, the latter predominating on the back; rump and upper tail coverts white, the latter spotted and barred transversely with black. Under parts pale ferruginous red, with numerous points and circular spots of brownish black on the neck before, and transverse bands of the same on the sides and under tail coverts; axillary feathers and under wing coverts white, spotted and transversely barred with black. Quills brownish black; shaft of first primary white; tail brownish black, with numerous transverse bands of ashy white, and frequently tinged with ferruginous, especially on the two middle feathers; bill greenish black; legs dark greenish brown. *Younger:* Entire under parts dull white, strongly marked with dull ashy on the neck in front, and transverse bands of the same on the sides; axillary feathers and under wing coverts white, spotted with brownish black; upper parts lighter than in the adult. Total length about 10 inches; wing, $5\frac{3}{4}$; tail, $2\frac{1}{4}$; bill, $2\frac{1}{4}$; tarsus, $1\frac{1}{4}$ inch.

Hab.—Entire temperate regions of North America.

Quite common in autumn near Fort Steilacoom. A few also remain throughout the summer and breed. A female specimen (371) killed May 5, 1856, near Fort Steilacoom, from the appearance of her plumage appeared to be then incubating. It measured $11\frac{3}{4}$–19, bill $3\frac{1}{16}$. In that vicinity the young "of the year" begin to appear on the edges of brackish pools and in other places abounding in their favorite food in August, and during the following two months birds of the species, of all ages, are very abundant.—S.

The red-breasted or robin snipe is not very abundant, and associates in flocks, with several species of small sandpipers, during spring and fall, along the edges of salt marshes and flats near the coast.—C.

TRINGA ALPINA, Linn., var. AMERICANA, Cass.

Red-backed Sandpiper.

Tringa alpina, Linn. Syst. Nat. I, 1766, 249.—Wilson, Am. Orn. VII, 1813, 25; pl. lvi.—Sw. F. B. Am. II, 1831, 383.—Nutt. Man. II, 106.—Aud. Orn. Biog. III, 1835, 580; pl. 290.—Ib. Syn. 234.—Ib. Birds Amer. V, 1842, 266; pl. 332, var. *Americana*, Baird & Cassin, Gen. Rep. Birds, 719.

Tringa cinclus, Linn. Syst. Nat. I, 1766, 251.—Wils. Am. Orn. VII, 1813, 39; pl. lvii.

Figures.—Wilson, Am. Orn. VII, pl. 7, fig. 3; pl. 56, fig. 2.—Aud. B. of Am. pl. 290; oct. ed. V, pl. 332.

Sp. Ch.—Bill longer than the head, wide at base, curved, slightly widened and flattened towards the end; nasal groove and another groove in the under mandible long and very distinct; wings long; tail short, with the two middle feathers longest and pointed; legs rather long and slender, lower half of the tibia naked; toes moderate, free at base, flattened underneath and slightly marginated; claws much compressed, hind toe small. Upper parts yellowish red, mixed with ashy, and every feather having a lanceolate, ovate or narrow spot in the centre, most numerous on the back and rump. Front, sides of the head, and entire under parts, ashy white, nearly pure white on the abdomen and under tail coverts; a wide transverse band of black across the lower part of the breast; neck before and upper part of the breast with narrow longitudinal spots of brownish black. Under wing coverts and axillary feathers white; quills light ashy brown, darker on their outer edges, with their shafts white; tail feathers light ashy brown; middle feathers darker, outer nearly white. Bill and legs very dark brownish black. Sexes alike.

Winter plumage.—Entire upper parts dark ashy, nearly black on the rump and upper tail coverts; throat, abdomen, axillaries, and under wing coverts, white; breast pale ashy, with longitudinal lines of dark brown.

Total length, 8½ to 9 inches; extent, 15¼ to 16; wing, 5; tail, 2½; bill from gape, 1½; tarsus, 1 inch.

Hab.—Entire temperate regions of North America.

This bird is very abundant on the salt marshes at the mouths of the rivers emptying into Puget Sound, where the species is resident throughout the year. In habits they do not differ from those recorded in Nuttall's Manual. Early in the season, before they have been rendered wild by being much shot at, I have observed that upon a volley being fired into a flock the unharmed birds in terror sweep around in several circles, and hovering "*buirch*," as the sportsmen say, over their wounded companions, and sometimes realight with them. At the moment of their hovering in a compact body over the wounded is the time generally seized to fire the reserved barrels, two or three shots will frequently bring down from thirty to sixty birds; and I have known one instance where an officer of the army bagged ninety-six birds from one discharge of his fowling piece. After being fired into once or twice the flocks, learning to avoid sympathizing with their dead and wounded, become shy and wary. At Puget Sound this species is very fond of alighting in flocks upon the half submerged drift logs which lie stranded on the flats off the entrances of the Nisqually and other rivers, especially at high water, when the surrounding marshes and flats are generally covered. Upon these logs the birds will sometimes for hours sit compactly huddled together and motionless—perhaps for the purpose of aiding the digestion of their food—perhaps simply because the high tide having covered their feeding grounds they have learned by experience that the most philosophical plan is "to take it easy" and await the subsidence of the waters.—S.

The red-backed alpine snipe, or ox-bird, is common in the same season and places as the preceding species.—C.

TRINGA MACULATA, Vieill.

Jack Snipe.

Tringa maculata, Vieillot, Nouv. Dict. XXXIV, 1819, 465.—Baird & Cassin, Gen. Rep. Birds, 720.

Tringa pectoralis, Say, Long's Exped. I, 1823, 171.—Bon. Am. Orn. IV, 1832, 43; pl. xxiii.—Nutt. Man. II, III.—Aud. Orn. Biog. III, 1835, 601; V, 582; pl. 294.—Ib. Syn. 233.—Ib. Birds Amer. V, 1842, 259; pl. 329.

FIGURES.—Bonap. Am. Orn. IV, pl. 23, fig. 2.—Aud. B. of Am. pl. 294; oct. ed. V, pl. 329.

SP. CH.—Bill rather longer than the head, compressed, slightly depressed and expanded at the tip; nasal groove long; wings long; legs rather long; tibia with nearly its lower half naked; toes free at base, flattened underneath and slightly margined; tail rather short; middle feathers pointed. Entire upper parts brownish black; all the feathers edged and tipped with ashy and brownish red; rump and upper tail coverts black, some of the outer feathers of the latter edged with white. Line from the bill over the eye ashy white; throat, abdomen, under wing coverts, axillary feathers, and under tail coverts, white. Breast and neck before ashy white; all the feathers darker at base, and with partially concealed lanceolate or pointed spots of brownish black. Quills brownish black; shaft of first primary white, of others brown; secondaries tipped and edged with white; tertiaries edged with dull reddish yellow. Bill and feet dark greenish black. Total length, about 9 inches; wing, $5\frac{1}{4}$; tail, $2\frac{1}{2}$; bill to gape, $1\frac{1}{2}$; tarsus, 1 inch.

Hab.—The entire coast of North America; South America; Europe.

This snipe is found moderately abundant at Puget Sound, but it is rare to find them there, except singly. A male specimen, marked 373, killed at Fort Steilacoom, measured, in length, 9.75 inches; extent, 18.25. The species appears to be only a visitor in the spring and fall, though a few, perhaps, remain through the summer.—S.

TRINGA WILSONII, Nuttall.

Least Sandpiper.

Tringa pusilla, WILSON, Am. Orn. V, 1812, 32; pl. 37. Not of Linnaeus.—AUD. Orn. Biog. IV, 1838, 180; pl. 320.—IB. Syn. 237.—IB. Birds, Am. V, 1842, 280; pl. 337.

Tringa wilsonii, NUTTALL, Man. II, 1834, 121.—BAIRD & CASSIN, Gen. Rep. Birds, p. 271.

FIGURES.—Wilson, Am. Orn. V, pl. 37, fig. 4.—Audubon's B. of Am. pl. 320; oct. ed. V, pl. 337.

SP. CH.—The smallest of all known species of this group found in North America. Bill about as long as the head, slightly curved towards the end, which is very slightly expanded; grooves in both mandibles to near the tip; wing long; tertiaries nearly as long as the primaries; tail short; middle feathers longest; outer feathers frequently longer than the intermediate; legs long; lower third of the tibia naked; toes long, slender, margined and flattened beneath; hind toe small. Upper parts with nearly every feather having a large central spot of brownish black, and widely margined with ashy and bright brownish red; rump and middle of the upper tail coverts black; outer coverts white, spotted with black. Stripe over the eye, throat, and breast pale ashy white, with numerous small longitudinal spots of ashy brown; abdomen and under tail coverts white. Quills dark brown, with the shafts of the primaries white; tertiaries edged with reddish. Middle feathers of the tail brownish black; outer feathers light ashy white. Under surface of wing light brownish ashy, with a large spot of white near the shoulder; axillary feathers white; bill and legs greenish brown, the latter frequently yellowish green. Total length from tip of bill to end of tail about $5\frac{1}{2}$ to 6 inches; extent, 11.50; wing, $3\frac{1}{2}$ to $3\frac{3}{4}$; tail, $1\frac{3}{4}$; bill to gape, $\frac{3}{4}$; tarsus, $\frac{3}{4}$ inch. Bill black; feet brown.

Hab.—Entire temperate North America.

Wilson's sandpiper is quite abundant during the spring and autumn in the vicinity of Fort Steilacoom, Puget Sound. They prefer the muddy edges of pools of brackish or fresh water, and are occasionally found along the borders of meadow brooks, especially in the spring. In 1856 they arrived at Fort Steilacoom during the first week in May, and were then seen either in small flocks or in pairs. Two males, shot at that time, measured respectively in length and extent 5.87, 11.38; —— and 6.11 inches. In the fall they are found in rather large flocks, and are then readily killed on the lagoons and mud flats at different localities along the sound; a few remain throughout the summer.—S.

Wilson's sandpiper I have only observed in summer, when they breed about the shores of the bays near the Columbia river, as I supposed, from seeing young in July, though I have not seen the nest. I have also found the species common along the Platte river, Nebraska, in summer, and have no doubt of their breeding there.—C.

CALIDRIS ARENARIA, (Linn.) Illiger.

Sanderling.

Tringa arenaria, Linn. Syst. Nat. I, 1766, 251.—Aud. Orn. Biog.—Ib. Birds Amer, V, 1842, 287; pl. 338.

Calidris arenaria, Illiger, Prod. 1811, 249.—Sw. F. B. Am. II, 366.—Nutt. Man. II, 1834, 4.—Baird & Cassin, Gen. Rep. Birds, p. 23.

Charadrius calidris, Linn. Syst. Nat. I, 1766, 255.—Wils. Am. Orn. VII, 1813, 68; pl. lix.

Charadrius rubidus, Gm. I, 1788, 688.—Wilson, Am. Orn. VII, 1813, 129; pl. lxiii.

Figures.—Wilson, Am. Orn. VII, pl. 59, fig. 4, pl. 63, fig. 3.—Aud. B. of Am. pl. 230; oct. ed. V, pl. 338.

Sp. Ch.—No hind toe; front toes moderate or rather long, flattened underneath; distinctly margined with a membrane. Bill rather longer than the head, straight, rather thick; ridge of upper mandible flattened; nasal groove deep and nearly as long as the upper mandible, not so distinct in the lower; both mandibles widened and flattened at the tip; aperture of the nostril large and covered with a membrane. Wing long; tail short, with the middle feathers longest; under coverts long as the tail; legs moderate; lower third of the tibia naked. Under parts light ashy, with lanceolate, hastate, and ovate spots of brownish black on the top of the head, on the back, scapulars, and shorter quills; rump and upper tail coverts with fine transverse lines of black. Under parts pure white. Shoulders brownish black, without spots; quills brownish black with their shafts white and much paler on their inner webs; greater wing coverts widely tipped with white; middle feathers of the tail ashy brown, edged with white; outer feathers paler; bill and legs greenish black. Sexes alike.

In spring plumage the head, neck, and breast are tinged with pale yellowish red and spotted with dark brown; back and scapulars edged and tipped with yellowish red; rump and upper tail coverts ashy brown; under parts of the body pure white.

Total length, 7¾ to 8 inches; extent, 15. 50; wing, 5; tail, 2; bill about 1 inch; tarsus about 1 inch. Bill and feet black.

Hab.—Entire temperate regions of North America, South America, Europe.

The Sanderling plover is quite abundant on the shores of the lower part of Puget Sound, and also along the beaches of Admiralty Inlet and the Straits of Fuca. They are most abundant during the autumn and early winter, although a few remain throughout the year at all seasons. They principally affect sand-spits and surf-beaches, and have much the habits of the *Tringæ* and *Totani*. In autumn they are fat and easily shot. When in good order this bird is delicious for the table—in my opinion being second to none of its relatives.—S.

The three-toed sandpiper is abundant on the sea-shore during winter, forming great flocks, together with other small species, especially the red-back and other sandpipers. A few of them are found near the mouth of the Columbia in July, so that they may possibly breed in the Territory.—C.

Sub-Family TOTANINAE, Long-legged Snipe.

SYMPHEMIA SEMIPALMATA, (Gm.) Hartlaub.

Willet.

Scolopax semipalmatus, Gmelin, Syst. Nat. I, 1788, 659.—Wilson. Am. Orn. VII, 1813, 27; pl. lvi.

Totanus semipalmatus, Temm. Man.—Bon. Obs. 1825; No. 206.—Sw. F. Bor. Am. II, 1831, 388; pl. lxvii.—Aud. Orn. Biog. III, 1835, 510: V, 585; pl. 274.—Ib. Birds Amer. V, 1842, 324; pl. 347.

Totanus (Catoptrophorus) semipalmatus, Bon. Syn. 1828, 328.—Nutt. Man. II, 1834, 144.

Symphemia semipalmata, Hartlaub, Rev. Zool. 1845, 342.—Baird & Cassin, Gen. Rep. Birds, 729.

Figures.—Wilson Am. Orn. VII, pl. 56, fig. 3.—Aud. B. of Am. pl. 274; oct. ed. V, pl. 347.—Rich. and Swains. Faun. Bor. Am. Birds, pl. 67.

Sp. Ch.—The largest American species of this genus. Bill longer than the head, straight, rather thick and strong; groove in the upper mandible extending about half its length, in the lower mandible nearly obsolete; wings long; legs long, strong; toes moderate, united at base by membranes, the larger of which unites the outer and middle toe; hind toe small; tail short. *Adult.*—Entire upper parts dark ash color, (without spots;) the shafts of the feathers brownish black; rump and upper tail coverts white. Under parts white, tinged with ashy on the neck and sides; axillaries and under wing coverts

brownish black; primary quills white at base, and tipped with brownish black; secondaries white, spotted with brownish black; tail ashy white, the two middle feathers strongly tinged with ashy; others spotted with dark ashy brown. Bill dark bluish brown, lighter at base; legs light blue. *Younger.*—Entire plumage spotted, and transversely banded with brownish black.

Total length about 15 inches; wing, 8¼; tail, 3¼; bill about 2½; tarsus about 2½ inches.

Hab.—Entire temperate regions of North America; South America.

I obtained a specimen of the Willet at San Francisco, Cal., where they are quite common in the markets during the autumn, winter, and spring. From their abundance in California I have no doubt that Dr. Townsend is correct in assigning this bird a place in the Oregon fauna. Unfortunately, I myself have never obtained a specimen north of San Francisco.—S.

Probably rare on the coast of Washington Territory, though sportsmen have told me they had shot it. I never obtained a specimen.—C.

GAMBETTA MELANOLEUCA, (Gm.) Bon.

Tell Tale Tattler; Stone Snipe; Greater Yellow-Legs.

Scolopax melanoleucus, Gmelin, Syst. Nat. I, 1788, 659.

Gambetta melanoleuca, Bon. Comptes Rendus, Sept. 1856.—Baird & Cassin, Gen. Rep. Birds, 731.

Scolopax vociferus, Wilson, Am. Orn. VII, 1813, 57; pl. lviii.

Totanus vociferus, Aud. Syn. 244.—Ib. Birds Amer. V, 1842, 316; pl. 345.

Sp. Ch.—Bill longer than the head, rather slender, curved towards the tip; wings rather long, first quill longest; tail short; neck and legs long; toes moderate, margined and flattened underneath, connected at base by membranes, the larger of which unites the outer and middle toe; hind toe small; claws short, blunt; grooves in both mandibles extending about half their length. Entire upper parts cinereous of various shades, dark in many specimens in full plumage, generally light with white lines on the head and neck and with spots and edgings of dull white on the other upper parts; lower back brownish black; rump and upper tail coverts white, generally with more or less imperfect transverse narrow bands of brownish black; under parts white, with longitudinal narrow stripes on the neck and transverse crescent lanceolate and sagittate spots and stripes on the breast and sides; abdomen pure white; quills brownish black with a purplish lustre, shaft of first primary white, secondaries and tertiaries tipped and with transverse bars and spots of ashy white; tail white, with transverse narrow bands of brownish black, wider and darker on the two middle feathers; bill brownish black, lighter at the base; legs yellow; iris brown; bill grayish black.

Total length about 14 inches; extent, 23½; wing, 7½ to 8; tail, 3¼ to 3½; bill, 2¼; tarsus, 2½ inches.

Hab.—Entire temperate regions of North America; Mexico.

The *great yellow-leg tattler* I found pretty generally distributed throughout the country—obtaining specimens in the remote interior on the Bitter Root stream of the Rocky mountains, and also on Puget Sound in the vicinity of the seacoast. This bird, in the last-named locality, is quite abundant during the spring and autumn, where it is found both on fresh water margins and also on the salt marshes and tide prairies at the mouths of the various rivers emptying into the sound. It is there in common with the gray snipe, (*M. griseus*,) known to the Nisqually Indians by the name of *Ky-yo-e-yah*, a word intended to represent the cry of this bird as it strikes the Indian ear. The habit of these aborigines of naming birds and beasts after their cries is quite common on the northwest coast.—S.

The yellow-leg snipe is common near the coast in summer, and I think some remain during the winter.—C.

RHYACOPHILUS SOLITARIUS, (Wils.) Cassin.

Solitary Sandpiper.

Tringa solitaria, Wilson, Am. Orn. VII, 1813, 53; pl. lviii.

Totanus solitarius, Aud. Syn. 1939, 242.—Ib. Birds Am. V, 1842, 309; pl. 343

Totanus chloropygius, Vieillot, Nouv. Dict. VI, 1816, 401.—Bon. Obs. 1825, No. 210.—Sw. F. B. Am. II, 1831, 393.—Nuttall, II, 159.—Aud. Orn, Biog. III, 1835, 576: V, 583; pl. 289.

Totanus glareola, Ord, ed. Wils. VII, 1825, 57.

Rhyacophilus solitarius, Baird & Cassin, Gen. Rep. Birds, 733.

Sp. Ch.—Bill rather longer than the head, straight, slender, compressed; both mandibles with narrow groves; wing long, pointed; tail medium or rather short, rounded; legs rather long, slender; lower half of the tibia naked; toes long, the outer united to the middle by a small membrane, flattened underneath, marginated. Upper parts greenish brown, with numerous small circular and irregular spots of ashy white; upper tail coverts darker. Under parts white; breast and neck before with numerous longitudinal lines of greenish brown; sides, axillaries, and under wing coverts white, with numerous transverse narrow bands of dark greenish brown; under tail coverts white, with a few transverse bands of dark brown. Quills brownish black, with a slight bronzed or reddish lustre on the primaries; two middle feathers of the tail greenish brown; other feathers of the tail pure white, with about five transverse bands of brownish black. Bill and legs dark greenish brown.

Total length, about 8 to 9 inches; extent 16. 62 to 17; wing, 5; tail, 2¼; bill, 1¼; tarsus, 1¼ inches.

Hab.—Entire temperate regions of North America; Mexico.

The solitary sandpiper is not rare about Puget Sound. While at Fort Steilacoom I obtained several specimens. Two of these, shot in May, 1856, rather exceeded the measurement given in the general report, being in length 9 inches each; extent 16.62 and 17; wing 3.50. They are a quiet solitary bird generally, and possesses no remarkable habits as far as I have noticed.—S.

Apparently less common on the west than the east side of the continent.—C

HETEROSCELUS BREVIPES, (Vieill.) Baird.

Wandering Tattler.

Totanus brevipes, Vieill. Nouv. Dict. VI, 1816, 410.—Cassin, Pr. N. A. Sc. VIII, 1856, 40.

Totanus oceanicus, Lesson, Comp. Buff. 1847, 244.

Totanus fuliginosus, Gould, Voy. Beagle, Birds. 1841, 130.

Heteroscelus brevipes, Baird & Cassin, Gen. Rep. Birds, 734.

Figures.—Gray, Genera, III, pl. 154?

Sp. Ch.—Rather larger than *T. flavipes*. Bill rather longer than the head; wings long; legs shorter than usual in this group, toes moderate. Entire upper parts dark lead colored, uniform, and without white marks; under parts white, with more or less of dark cinereous or plumbeous on the sides and neck; under wing coverts white, spotted and barred with dark plumbeous. Quills dark brown; shaft of the first primary white on its upper surface; shafts of other primaries reddish brown on the upper surface, and white on their under surfaces. Tail dark lead colored, uniform with upper parts of body. Bill dark; feet greenish. *Younger.*—Under parts white, transversely barred with dark ashy brown, especially on the sides and flanks. Throat and middle of abdomen white.

Total length, *male*, 10¾ to 11½; extent, 20½ to 21½ inches. *Female*, 11½ to 11¾; extent, 21¾ inches; wing, 6½; tail, 3¼; bill, 1½; tarsus, 1¼ inches.—Iris, brown; bill, dark olive; legs, dull yellow.

Hab.—Washington Territory; islands in the Pacific; South America; northeastern Asia; Japan.

This species seems to be rather rare on the western coast of America, though a few probably breed north of the Straits of De Fuca. On the first of May, 1854, I shot a pair, the first I had seen, at Shoalwater bay, and during the month saw two other pairs. Each pair were mates, and did not associate with any other shore birds. They frequented a rocky point, feeding among the stones and seaweeds, and sometimes hiding behind them. When started, they make a loud piping cry, and flew much like the other species. In September, 1855, I obtained a young bird near the same place, which was somewhat different from the adult in spring plumage.—C.

TRINGOIDES MACULARIUS, (Linn.) Gray.

Spotted Sandpiper.

Tringa macularia, Linn. Syst. Nat. I, 1766, 249.—Wils. Am. Orn. VII, 1813, 60; pl. lix.

Totanus macularius, Temminck, Man. II, 1820, 656.—Bon. Obs. Wils. 1825, No. 211.—Nutt. Man. II, 1834, 162.—Aud. Orn. Biog. IV, 1838, 81; pl. 310.—Ib. Syn. 242.—Ib. Bird's Amer. V, 1842, 303; pl. 342.

Actiles macularius, Bon. List, 1838.

Tringoides macularius, Gray, genera. Baird and Cassin, Gen. Rep. Birds, 735.

Figures.—Wilson, Am. Orn. VII, pl. 59, fig. I.—Aud. B. of Am. pl. 310, oct. ed. V, pl. 342.

Sp. Ch.—Small; bill rather longer than the head, straight, slender; long grooves in both mandibles; wing rather long, pointed; tail medium, rounded; legs rather long; lower third of the tibia naked; toes long, margined, and flattened underneath; outer connected with the middle toe by a large membrane; inner very slightly connected to the middle toe. Upper parts brownish olive green, with a somewhat metallic or bronzed lustre, and with numerous longitudinal lines, and sagittate lanceolate, and irregular spots of brownish black, having the same lustre. Line over the eye and entire under parts white, with numerous circular and oval spots of brownish black, smaller on the throat, largest on the abdomen. Quills brown, with a green lustre; primaries slightly tipped with white, and having a white spot on their inner edges; secondaries white at their bases, and tipped with white; middle feathers of the tail same green as other upper parts, outer tipped with white, and with irregular bars of brownish black. Bill yellowish green, tipped with brown; feet reddish yellow. When fresh, the bill is black, yellow at base, and feet flesh color, according to Cassin.

Young less bronzed above, and under parts white, without spots.

Total length, 7½ to 8 inches; extent, 12¾; wing, 4½; tail, 2; bill, 1; tarsus, rather less than 1 inch.

Hab.—Entire temperate North America; Oregon. Europe.

Two specimens which I obtained of the "tip-up," or peet-weet snipe of the northwest, both seemed to differ slightly from the description of the *Tringoides macularius* in the text of Audubon's Synopsis, but in *habits*, *voice*, *size*, and *general appearance* the Pacific and Atlantic birds appear identical. The species is not abundant in Oregon and less so in Washington Territory.

At Panama, in January, 1856, I saw "*peet-weets*" quite common on the shores of the bay and islands in the vicinity. I suppose that the birds I there saw were identical with the Oregon species.—S.

The spotted sandpiper is common during summer in the interior, frequenting the margins of brooks and rarely appearing along the coast. It raises its young in the Territory and retires south in October.—C.

TRYNGITES RUFESCENS, (Vieill.) Cab.

Buff-breasted Sandpiper.

Tringa rufescens, Vieillot, Nouv. Dict. XXXIX, 470. (Louisiana.)—Ib. Galerie Ois. II, 1825, 105; pl. 238.—Nutt. Man. II, 1834, 113.—Aud. Orn. Biog. III, 1835, 451; pl. 265.—Ib. Syn. 235.—Ib. Birds Amer. V, 1842, 264; pl. 331.

? *Actidurus naevius*, Heermann, Pr. Acad. N. S. Phil. VII, 1854, 179. (Texas.)

Tryngites rufescens, Cab. Baird & Cassin, Gen. Rep. Birds, 739.

Figures.—Trans. Linn. Soc. London, XVI, pl. 2.—Gould, B. of Eur. IV, pl. 326.—Aud. B. of Am. pl. 265; oct. ed. V, pl. 331.—Vieill. Gal. II, pl. 238.

Sp. Ch.—Bill about the length of the head, straight, compressed, narrow at the point; nasal groove long; wings very long; first quill longest; tertiaries rather shorter; tail moderate or longer than usual in this group; legs rather long; lower third of the tibia naked; toes free at base, flattened underneath, and slightly margined; hind toe small. Upper parts pale and dull ashy brown, with a yellowish tinge; every feather with a large central, lanceolate, crescent-shaped, or oblong spot of black, frequently with a glossy green tinge, especially on the back and shorter tertiaries. Under parts light yellowish red, or pale fawn color; many feathers tipped with white, and paler on the flanks and abdomen, on the breast

with partially concealed small spots of black; axillary feathers white. Quills with their outer webs light brown, inner webs ashy white marbled with black and narrowly tipped with white; middle tail feathers brownish black; outer feathers lighter, with transverse waved lines of black, and tipped with white; bill greenish black; legs greenish yellow. Total length 7½ to 8 inches; wing, 5½; tail, 3; bill, from gape, 1; tarsus, 1¼ inches.

Hab.—All of North America, South America, Europe.

Common at Shoalwater bay during the migrating season, in company with the other little sandpipers, and apparently seeking the same resorts and subsistence.—C.

LIMOSA FEDOA, (Linn.) Ord.

Marbled Godwit.

Scolopax fedoa, Linn. Syst. Nat 10th ed. I, 1758, 146: 12th ed. I, 1766, 244.—Wils. Am. Orn. VII, 1813, 30; pl. lvi.
Limosa fedoa, Ord. ed. Wils. VII, 1825.—Ib. List, 1838.—Sw. F. B. A. II, 1831, 395.—Nutt. Man. II, 1834, 173.—Aud. Orn. Biog. III, 1835, 287; V. 590; pl. 238.—Ib. Syn. 246.—Ib. Birds Am. V, 1842. 331; pl. 348.—Baird & Cassin, Gen. Rep. Birds, 740.
Scolopax marmorata, Lath. Ind. II, 1790, 720.

Figures.—Wilson, Am. Orn. VII, pl. 56, fig. 1.—Aud. B. of Am. pl. 238; oct. ed. V, pl. 348.—Edwards' Birds, III, pl. 137.—Vieill. Gal. des Ois. II, pl. 243.

Sp. Ch.—Bill long, curved upwards; both mandibles grooved; wings long; tail short; legs long; tibia with its lower half naked; toes rather short, margined and flattened underneath; the outer and middle toes united by a rather large membrane. Entire upper parts variegated with brownish black and pale reddish, the former disposed in irregular and confluent bands, and the latter in spots and imperfect bands; in many specimens the black color predominating on the back, and the pale red on the rump and upper tail coverts. Under parts pale rufous, with transverse lines of brownish black on the breast and sides; under wing coverts and axillaries darker rufous; outer webs of primaries dark brown, inner webs light rufous; secondaries light rufous; tail light rufous, with transverse bars of brownish black. Bill pale yellowish, red at base, brownish black at the end; legs ashy black. Total length about 18 inches; wing, 9; tail, 3½; bill, 4 to 5; tarsus, 3 inches.

Hab.—Entire temperate regions of North America; South America.

The marbled godwit frequents Shoalwater bay in immense flocks during spring and fall, a few remaining all winter. The first flocks of young birds arrive from the north in July, but I think none breed in the Territory. They frequent, during their stay, soft mud flats, which are extensive in the bay, feeding at low tide during either day or night. At high water they sit, concealed by the grass, always at a distance from woods or other concealment of their enemies, and are consequently very difficult to approach, being watchful and shy at all times. Along the gravelly steep shores of the upper part of Puget Sound they rarely appear. In the beginning of May they leave for their northern breeding grounds. I have examined large numbers, and have never identified more than one species in the Territory. The name of "curlew" is commonly, but wrongly, given them.—C.

The godwit is exceedingly abundant in the markets of San Francisco, where I obtained and preserved a specimen in March, 1857. It measured in length 18 inches; extent, 31.25; bill, 4.00.—S.

NUMENIUS LONGIROSTRIS, Wilson.

Long-billed Curlew.

Numenius longirostris, Wilson, Am. Orn. VIII, 1814, 24; pl. lxiv.—Sw. F. B. A. II, 1831, 376.—Nutt. Man. II, 1834, 88.—Aud. Orn. Biog. III, 1835, 240: V, 587; pl. 231.—Ib. Birds Am. VI, 1843, 35; pl. 355.—Baird & Cassin, Gen. Rep. Birds, 743.
? Numenius occidentalis, Woodhouse, Pr. A. N. Sc. VI, Nov. 1852, 194.—Ib. Sitgreaves' Expl. Zuñi & Col. 1853, 98; pl. vi.

Sp. Ch.—The largest American species of this genus. Bill very long, much curved; upper mandible longer than the under, somewhat knobbed at the tip; wing rather long; legs moderate; toes united at base. Entire upper parts pale

rufous, tinged with ashy; every feather with transverse and confluent bands of brownish black, most numerous and predominating on the back and scapulars; secondary quills, under wing coverts, and axillaries, bright rufous; primaries with their outer webs brownish black and their inner webs rufous, with transverse bands of black. Under parts pale rufous, with longitudinal lines of black on the neck and sides; tail rufous, tinged with ashy, transversely barred with brownish black. Bill brownish black; base of under mandible reddish yellow; legs bluish brown. Specimens vary to some extent in the shade of the rufous color of the plumage, and very much in the length of the bill. The rufous color is probably more distinct in the young. Total length about 25 inches; wing, 10 to 11; tail, 4; bill, 5 to 8; tarsus, 2¼ inches.

Hab.—The entire temperate regions of North America.

Curlews, apparently of this species, are quite common throughout Minnesota, where, while I was attached to the northern Pacific railroad exploration, I observed them in June and July, 1853, very abundant for several hundred miles west of the Mississippi, breeding and rearing their young on the vast prairies of that region.

In Oregon, near Fort Dalles, and in Washington Territory, near the Simcoe and Yakima valleys, they are abundant during the breeding season.

In the vicinity of Puget Sound the long-billed curlew is occasionally seen. During a long residence at Fort Steilacoom I obtained but a single pair, shot on Muckleshoot prairie August 1, 1856. Measurements, in detail, of these were carefully taken, and were as follows: ? male, length, 21.50 inches; extent, 40; wing, 12; bill, 5; tibia, 4.50; tarsus, 3.50. ? Female, length, 20; extent, 36.25; wing, 10.50; bill, 4.50; tibia, 4; tarsus, 3.00.

Both birds had the legs and feet bluish gray; bill dark at the terminal end, reddish dusky at base; iris dark. During the breeding season this species is readily "tolled" towards the gunner by whistling in imitation of its cry. In this they resemble the avosets and yellow-legged tattler.—S.

I observed three times only, during eighteen months' residence near the coast, a curlew of large size, which I supposed to be the long-billed species common near San Francisco. They seemed to be stragglers, and were very shy, alighting only a few minutes at Shoalwater bay, W. T., and then going off southward.—C.

Family RALLIDAE.—The Rails.

RALLUS ELEGANS, Aud.

King Rail; Marsh Hen.

Rallus elegans, Aud. Orn. Biog. III, 1835, 27; pl. 203.—Ib. Syn. 21.—Ib. Birds Am. V, 1842, 160; pl. 309.—Gundlach, Cab. Jour. 1856, 427.—Baird & Cassin, Gen. Rep. Birds, 746.

Rallus crepitans, Wils. Am. Orn. VII, 1813; pl. lxii, f. 2. (Not the description.)

Sp. Ch.—The largest species of the United States. Upper parts olive brown, with longitudinal stripes of brownish black, most numerous on the back; line from the base of the bill over the eye dull orange yellow; space before and behind the eye brownish cinereous. Throat and lower eyelid white; neck before and breast bright rufous chestnut; sides and abdomen, and under tail coverts, with transverse bands of brownish black and white, the dark bands being the wider; tibiae dull yellowish white, with spots and transverse bars of ashy brown. Upper wing coverts reddish chestnut; under wing coverts black, with transverse lines of white. Sexes alike. Total length (from tip of bill to end of tail) about 17 inches; wing, 6½; tail, 3.

Hab.—Middle and southern States on the Atlantic ocean; California.—(Dr. Suckley.)

The king rail is very common in the San Francisco market; and I am informed by George Gibbs, esq., that they are abundant on Humboldt bay, further to the north. I have not seen any of this species in the Puget Sound district, but suppose that in favorable localities they are occasionally to be found.

A fine specimen was presented to me in San Francisco by F. Gruber, an excellent practical taxidermist of that city.—S.

RALLUS VIRGINIANUS, Linn.

Virginia Rail; Sora.

Rallus virgininaus, Linn. Syst. Nat. I, 1766, 263, (may possibly refer to autumnal *Porzana carolina*)--Wils. Am. Orn. VII, 1813, 109; pl. lxii, f. 1.—Bon. Obs. Wils. 1825; No. 210.—Nutt. Man. II, 1834, 205.—Aud. Orn. Biog. III, 1835, 41: V, 573; pl. 205.—Ib. Syn. 216.--Ib. Birds Am. V, 1842, 174; pl. 311.—Cab. Jour. 1856, 427.—Baird & Cassin, Gen. Rep. Birds, 748.

Figures.—Edwards' Birds, VI, pl. 279.—Wilson, Am. Orn. VII, pl. 62, fig. 1.—Aud. B. of Am. pl. 205; oct. ed. V, pl. 311.

Sp. Ch.—Much smaller than either of the preceding, but resembling them in form, and resembling also *R. elegans* in colors. Upper parts olive brown, with longitudinal stripes of brownish black; line from base of bill over the eye reddish white. Throat white; neck before and breast bright rufous; abdomen and under tail coverts with transverse bands of black and white, the former being the wider. Upper wing coverts bright rufous chestnut; under wing coverts black, with transverse lines of white. Total length (from tip of bill to end of tail) about 7½ to 9 inches; extent, 13¾; wing, 4; tail, 1½ inches.

Hab.—The entire temperate regions of North America; New Mexico, (Dr. T. C. Henry;) California, (Mr. R. D. Cutts;) Oregon, (Dr. Geo. Suckley.)

I saw one of these birds on the Puyallup marshes, Puget Sound, October 7, 1856. It was on the edge of a small "cat-tail marsh," but escaped before I could get a shot at it. I afterwards obtained a specimen at Port Townsend, Washington Territory, which was found dead during a snow storm, January 5, 1857. The dimensions of this specimen were a little larger than those given in the general report as those usual to the species, being 9½, 13¾, 4⅛, bill 1⅜. Iris flame red, (perhaps a postmortem change?) Length from bill to end of largest toe, (both drawn to their fullest extent,) 13 inches. Legs dusky yellowish brown, dingy about the flexures of the joints. Tarsus, 1 3½-16. From angle of the eye to end of bill, 1 1-16. Bill dusky above and reddish orange beneath; edges and upper mandible *near* the base reddish orange. Anterior edge of wing *white*.—S.

The Virginian rail appears to be a rare visitor in the Territory, as I never saw but one, though I resided near marshes suited to their habits, and often looked particularly for them. In the end of September, 1855, I noticed one in such a marsh near the mouth of the Columbia, and, as this species is the most abundant in California, have little doubt of its identity.—C.

FULICA AMERICANA, Gmelin.

Coot; Poule d'eau; Mud Hen.

Fulica americana, Gm. Syst. Nat. I, 1788, 704.—Bon. Obs. Wils. 1825, No. 234.--Aud. Orn. Biog. III, 1835, 291: V, 568; pl. 239.—Ib. Syn. 212.--Ib. Birds Amer. VI, 1842, 138; pl. 305.—Hartlaub, Cab. Jour. I, Extraheft für 1853, 1854, 75; 87.—Baird & Cassin, Gen. Rep. Birds, 751.

Fulica atra, Wils. Am. Orn. IX, 1825, 61; pl. lxxiii.

Sp. Ch.—Head and neck glossy black, with a tinge of ashy; under tail coverts white. Entire other plumage dark bluish cinereous or slate color, with a tinge of olive on the back and darker on the rump. Edge of wing at shoulder and edge of first primary white; secondary quills tipped with white; rump frequently tinged with brownish. Bill very pale yellow or nearly white, with a transverse band of brownish black near the end; tip white; legs dull grayish green. Female similar, but with the tints lighter. Young like the adult, but with the under parts lighter; abdomen frequently ashy white; back and rump dark olive brown; head and neck lighter.

Total length about 14 inches; wing, 7; tail, 2 inches.

Hab.—Entire temperate regions of North America.

Abundant in all the small weedy lakes of both Territories. I obtained specimens both at Fort Dalles and Fort Steilacoom. In both places the coots were much less shy than the wild ducks of the vicinity.—S.

The coot or mud hen is common in marshes and lakes of the Territory, where it breeds, the young being hatched early in June. It seems, however, like most water birds, to be much more abundant in California during winter, and probably does not remain north of the Columbia at that season.—C.

ORDER VI. NATATORES. Swimming Bird.

Family ANATIDAE.

Sub-Family CYGNINAE.—The Swans.

CYGNUS AMERICANUS, Sharpless.

American Swan.

?Anas columbianus, Ord. Guthrie's Geog. 2d Am. Ed. II, 1815, 319; based on Whistling Swan, Lewis & Clark, II, 192.

Cygnus americanus, Sharpless, Doughty's Cab. N. H. I, 1830, 185, pl. xvi.—Ib. Am. Jour. Sc. XXII, 1831, 83.—Aud. Orn. Biog. V, 1839, 133; pl. 411.—Ib. Syn. 274.—Ib. Birds Amer. VI, 1843, 226; pl. 384.—Baird, Gen. Rep. Birds, p. 758.

Olor americanus, Bonap. Consp. Anser. Comptes Rendus, XLIII, Sept. 22, 1856.

Cygnus bewickii, Sw. F. Bor. Am. II, 1831, 224.

Cygnus ferus, Nuttall, Man. II, 1834, 368.

Sp. Ch.—Bill as long as the head, broad, high at the base; the feathers ending on the forehead in a semi-circular outline. Nostrils far forward, the anterior extremity considerably more forward than half the commissure. Tail of 20 feathers.

Adult pure white; bill and legs black; the former with an orange or yellowish spot in front of the eye. Less mature specimens with the head above tinged with reddish brown. Length, 55 inches; wing, 22.00; tarsus, 4.25; bill above, 4.20.

Hab.—Continent of North America.

The whistling swan is quite abundant during winter on the Columbia, and is found rather more sparingly on Puget Sound. A specimen obtained by me in the vicinity of Fort Steilacoom, on the 24th of October, 1856, measured 53¼ inches. Extent, 85; wing, 21. This bird is called by the Nisqually Indians *Swo-kaid*. Its flesh is very delicate, and is excellent for the table.—S.

The American swan is common during winter along the Columbia river above its mouth, but rarely seen near the sea-shore.—C.

CYGNUS BUCCINATOR, Rich.

Trumpeter Swan.

Cygnus buccinator, Rich. F. Bor. Am. II, 1831, 464.—Nuttall, Man. II, 1834, 370.—Aud. Orn. Biog. IV, 1838, 536; V, 114; pl. 406 and 376.—Ib. Syn. 74.—Ib. Birds, Amer. VI, 1843, 219; pl. 382, 383.—Baird, Gen. Rep. Birds, p. 758.

Olor buccinator, Wagler, Isis, 1832, 1234.—Bon. Comptes Rendus, XLIII, Sept. 1856.

Sp. Ch.—Bill broad, longer than the head; the feathers ending on the forehead in a semi-eliptical outline. The nostrils with the anterior extremity as far forward only as half the commissure. Tail of 24 feathers.

Adult pure white throughout, the bill and legs entirely black; the bill without any red spot at the base. Less mature specimens with the head above tinged with reddish brown.

Length about 50 inches; wing, 24 00; bill above, 4.50; tarsus, 4.60.

Hab.—Western America, from the Mississippi valley to the Pacific.

This bird is undoubtedly an inhabitant of Washington and Oregon Territories. It is, like the preceding species, more abundant on the Columbia river than at Puget Sound. In the

winter of 1853–'54, I noticed immense flocks of swans, apparently of this species, collected along the shores of the river mentioned, and spread out along the margin of the water for a distance varying from an eighth to a quarter of a mile.

I obtained a fine trumpeter swan on Pike lake, Minnesota, in June, 1853. They are quite common on the lakes in that vicinity in summer, breeding and raising their young.—S.

The trumpeter swan associates with the preceding species at the same season and in the same places. Both arrive from the north in the beginning of December, but I have not had an opportunity of noticing their departure. Swans are said to be rare visitors near San Francisco.—C.

Sub-Family ANSERINAE.—The Geese.

ANSER HYPERBOREUS, Pallas.

Snow Goose.

Anser hyperboreus, Pallas, Spic. Zool. VI, 1767, 80, 25.—Sw. F. B. A. II, 1831, 467.—Nutt. Man. II, 344.—Aud. Orn. Biog. IV, 1838, 562; pl. 381.—Ib. Syn. 273.—Ib. Birds Amer. VI, 1843, 212; pl. 381.—Cassin, Pr. A. N. S. VIII, 1856, 11.—Baird, Gen. Rep. Birds, p. 760.

Anas hyperborea, Gm. I, 504.—Wils. Am. Orn. VIII, 1814, 76; pl. lxviii and lxix.

Sp. Ch.—*Adult:* Bill and legs red. Color pure white. Primary quills black towards the end, silvery bluish gray towards the base, where the shafts are white. The spurious quills are also bluish. Inside of wings, except primary quills, white. Immature birds have the head washed with rusty.

Snow geese were seen by me moderately abundant on the shores of Clark's Fork of the Columbia and its branches during my canoe voyage from the St. Mary's valley (Rocky mountains) to Fort Vancouver in 1853. They were much more tame than the brant or other geese I have seen; so much so that myself and party had several shots at a small flock, which we approached so near that I killed a fine individual with my revolver.

I obtained a very good specimen at Fort Steilacoom in December, 1856, where it is not uncommon during the cold months.—S.

The snow goose occasionally stops on the sand bars and prairies along the coast, but the greater part of them seem to go on directly to the plains of California, where they abound in winter.

Geese were seen in August by some of our party on the summit of the Cascade mountains, where they probably breed, in company with ducks, shell-drakes, and cranes. I did not find out which were the species observed.—C.

ANSER GAMBELII, Hartlaub.

White Fronted Goose; Laughing Goose.

Anser albifrons, Sw. F. B. A. II, 1831, 456. Not of Gmelin.—Nutt. Man II, 346.—Aud Orn. Biog. III, 1835, 568; pl. 280.—Ib. Syn. 272.—Ib. Birds Amer. VI, 1843, 209; pl. 380.

Anser gambelii, Hartlaub, Rev. et Mag. Zool. 1852, 7.—Baird, Gen. Rep. Birds, 761.

Sp. Ch.—Tail of sixteen feathers. Bill and legs red. Along sides of bill and forehead white, margined behind with blackish brown. Rest of head and neck grayish brown, becoming pale on the jugulum. Back bluish gray, the feathers anteriorly tipped with brown; the sides similarly colored. The breast and belly grayish white, blotched irregularly with black; the anal region, sides behind, and beneath the tail, with the upper coverts, white. The secondary quills and ends of primaries are dark brown; the remaining portion of primaries and the covert silvery ash. The shafts of quills white. Greater coverts edged with white. Tail feathers brown, tipped with white. Axillars and under surface of wings ashy plumbeous. Length, 28 inches; wing, 16. 30; tarsus, 2. 88; commissure, 2. 04.

Hab.—Whole of North America.

The white-faced goose is very abundant on this coast in fall and spring, but I believe emigrates to California for the winter. Flocks of several hundreds passed the mouth of the Columbia on their way southward as early as September 8. They remain about Shoalwater bay throughout November, feeding almost entirely on the grassy dry plains near the beach, and rarely appearing in the bays except in the middle of the day, when, with several other species, float quietly at a distance from the shore, often asleep, though always watchful.—C.

Very abundant in California, where they may be found in great numbers in the San Francisco markets throughout the winter, and as late in the spring as April 1. This species is given by Dr. Townsend in his list of Oregon birds, but it is by no means as abundant there as either the brant or snow geese. Although occasionally a visitor of Washington Territory, it is so *rare* that I was unable to obtain a single specimen.—S.

BERNICLA CANADENSIS, (Linn.) Boie.

Canada Goose.

Anas canadensis, Linn. Syst. Nat. I, 1766, 198.—Wils. Am. Orn. VIII, 1814, 52; pl. lvii.

Anser canadensis, Vieill. Nouv. Dict.—Sw. & Rich. F. Bor. Am. II, 1831, 468.—Nutt. Man II, 349.—Aud. Orn. Biog. III, 1835, 1: V, 607; pl. 201.—Ib. Syn. 270.—Ib. Birds Amer. VI, 1843, 178; pl. 376.

Bernicla canadensis, Boie, Isis, 1826, 921.—Baird, Gen. Rep. Birds, 764.

Sp. Ch.—Tail of eighteen feathers. Head, neck, bill, and feet, deep black. A large triangular patch of white on the cheeks behind the eye; the two of opposite sides broadly confluent beneath, but not extending to the rami of lower jaw; a few whitish feathers on lower eyelid. Upper parts brown, edged with paler. Under parts light, with a tinge of purple gray, sometimes a shade of smoky brown; the edges of the feathers paler; the color of the body of the feathers, though similar, becoming deeper on the sides, tibia, axillars, and inside of wings. The gray of the belly passes gradually into white on the anal region and under coverts; the upper tail coverts are pure white. The primary quills and rump are very dark blackish brown; the tail feathers are black. Length, 35; wing, 18; tarsus, 3.10; commissure, 2.10.

Hab.—Whole of North America. Accidental in Europe.

The common wild or Canada goose is rarely seen in the bays along the coast, as it takes an interior route in its migration southward. It is common during mild winters in the Columbia valley, near Fort Vancouver. In California the hunters generally consider this species much larger than the Atlantic wild goose, and say that it weighs more. I never had an opportunity of measuring them.—C.

This goose is abundant on the Columbia river, and found sparingly on Puget Sound. Seen also by me in the San Francisco market.—S

BERNICLA LEUCOPAREIA, (Brandt,) Cassin.

Anser leucopareius, Brandt, Bull. Sc. Acad. St. Petersb. I, 1836, 37, (Aleutians.)—Ib. Desc. et Icones Anim. Ross. Aves, fasc. I, 1836, 13; plate ii.

? *Bernicla leucopareia*, Cassin, Ill. I, 1855, 272; pl. xlv.

Bernicla leucopareia, Baird, Gen. Rep. Birds, 765.

Sp. Ch.—Tail of eighteen feathers; general appearance that of *A. canadensis*, but much darker; head and neck black, bounded inferiorly by a well defined half ring of white on the throat; a white patch on each cheek, the two confluent below, triangular on the sides and truncate above; the posterior outline perpendicular, the anterior sloping backwards behind the eye, almost exactly as in *A. canadensis;* there is a faint whitish patch on lower eyelids; upper parts dark wood brown, turning gradually into black on the rump, tail and primary quills, each brown feather of the fore back and wings with a rather paler edge. The under parts are very dark brown, as dark as the back of *A. canadensis*, paler along the middle of the belly, the sides as dark as the back; each feather has an obsolete margin of lighter; the region around anus is white, abruptly defined against the brown of the belly; the under and upper tail coverts are white; the bill is quite short, the culmen about half the tarsus, which is decidedly longer than the middle toe. Length, about 35 inches; extent, about 63; wing, 18; tarsus, 3.44; commissure, 1.90.

Hab.—West coast of America.

I obtained a single specimen of this goose at Port Townsend, Puget Sound, in January, 1857. It was brought for sale, with others of the same species, by some Indians of the vicinity, who had shot them on some of the neighboring prairies. My specimen I first took to be the *B. hutchinsii*, (figured by Cassin as *B. leucopareia?)* but as the measurements seemed unusually large, I determined to preserve the skin. The bird measured 34.50 inches in length, 62.50 in extent; wing, (from brachio-carpal joint,) 17.25.

As I understand Mr. Cassin's article on the *A. leucopareias* of Brandt, he seems to consider it identical with *Hutchins' goose.* In this view I concur with Mr. Cassin—*i. e.*, if the deciding point should rest in the *presence or absence* of the white collar and small dimensions of the bird. Specimens of the Hutchins' goose were obtained by me at Fort Steilacoom both *with and without* the white collar, which seems to be a mark peculiar to either age or condition, and *not specific*, as birds differing in this respect were killed apparently from the same flock. [For measurements of Hutchins' geese, see next species.] If the Hutchins' goose takes the synonym of *leucopareia*, then the description at the head of this article, given by Professor Baird, will not apply to that species, and the bird critically examined by the latter—and the only one of the kind in the Smithsonian collection—which was obtained by me at Port Townsend, will probably be called *B. occidentalis*, as recommended by Professor Baird.—S.

BERNICLA HUTCHINSII, (Rich.) Bonap.

Hutchins' Goose.

Anser hutchinsii, Rich. F. Bor. Am. II, 1831, 470.—Nutt. Man. II, 362.—Aud. Orn. Biog. III, 1835, 526; pl. 277.—Ib. Syn. 271.—Ib. Birds Am. VI, 1843, 198; pl. 377.

Bernicla hutchinsii, Bon. List, 1838.—Baird, Gen. Rep. Birds, 766.

Sp. Ch.—Precisely similar to *A. canadensis*, but smaller. Tail of 16 feathers. Tarsus longer than middle toe and claw. Length, (according to the Gen. Rep., *see below*,) 30 inches; wing, 15.80; tarsus, 2.70; commissure, 1.76.

Hab.—Northern and western regions of North America.

As I have stated in the notes on the preceding species, I do not consider the presence or absence of the white collar as a specific character in this species, (the *B. leucopareia* of Cassin.)

A specimen regarded by Professor Baird as *B. Hutchinsii*, got by me at Fort Steilacoom, was identical in habits and plumage (excepting the *ring*) with many others seen and obtained by me in the same locality. Two of these measured less than the standard in the general report.

Length, 27.50 inches; extent, 56.50; wing, from carpal joint, 16.25. Another: 27.50; 54.50; 13.50.

This goose is very abundant on the Nisqually plains in autumn, where, in the early part of the day, their sonorous honking enlivens the senses and is an agreeable music to the ear of the sportsman. At night, and also during the middle of the day, they retire in flocks to the fresh water lakes in the vicinity, where, resting on the surface, they leisurely paddle about or lazily sleep. The name given to this species by the Nisqually Indians is *ah-hah*, a name which is considered to be similar to their honking cry.

They are excellent eating, and, as they subsist almost entirely upon grass, have no fishy or other disagreeable flavor. They arrive on the Nisqually plains about October 1, and continue abundant for two months thereafter. They are also quite abundant at the same season on the "tide prairies" at the mouths of the various rivers emptying into Puget Sound.—S.

Hutchins' brant appears to be the most abundant of the goose tribe along the coast of this Territory, where they appear in large flocks in October, and remain about the bays during most of the winter, disappearing only in the coldest month for a short time. They feed principally on the mud flats at low tide, eating vegetable and animal food which they find there.

Among large numbers that I have examined I have never observed the peculiar differences characterizing the white-necked brant.—C.

BERNICLA NIGRICANS, (Lawrence,) Cassin.

Black Brant.

Anser nigricans, Lawrence, Ann. N. Y. Lyc. IV, 1846, 171; plate.

Bernicla nigricans, Cassin, Ill. I, ii, 1853, 52; pl. x.—Baird, Gen. Rep. Birds, 1858, 767.

Sp. Ch.—Head, neck, and body anterior to the wings deep black, passing into dark sooty plumbeous on the rest of the body; this color beneath extending nearly to the anus, and above shading insensibly into the black of the rump. Middle of the throat with a white patch extending round on the sides, and somewhat streaked with black. No white on the eyelids. Sides of rump and of base of tail, with upper and under tail coverts concealing the tail, and space across the anus, white; primary and secondary quills and tail black. Feathers on the sides of the body beneath wings like the belly, but with white tips. The measurements given in the general report are as follows: Length, 29 inches; wing, 13.80; tursus, 2.30; commissure, 1.50. A female obtained by Dr. Suckley, near Port Townsend, Washington Territory, measured differently: Length, 23.75 inches; extent, 44.75; wing, 12.75; commissure, 1.50; from angle of eye to tip of bill, 2.25; height of bill at the base, 0.87; bill along ridge, 1.31; tarsus, 2.25; tail from tip of coccyx, 3.38. Bill, black; iris, dark (brown?); feet and tarsi, dusky bronze. Lower tail coverts extended slightly beyond tail. Collar on the nape, interrupted behind by an isthmus of black, which, when the feathers were stroked smooth, was about half an inch in width. The collar was mottled by the occurrence of black feathers, and anteriorly was about an inch wide

On the 20th of January, 1857, I obtained a brant at Sekwim bay, near Port Townsend, Washington Territory, which at once struck me as identical with the *B. nigricans* of Lawrence, and figured by Cassin in his work on the "Birds of California," &c.; and upon comparing the specimen with the description there given, I was pleased to find that it agreed in all essential particulars. The skin was preserved, and is now in the Smithsonian collection; its measurements are those above given. The breast and belly are somewhat lighter than in Cassin's figure, being blackish dusky, with a slight brownish tinge posteriorly. The bird also differs from the common brant in having no white markings on the head. These brant are extremely abundant about the Straits of Fuca in winter.

They appear to prefer the vicinity of the coast, and subsist, by preference, on sedge grass growing near salt water. They also spend much time in the water, being more duck-like in their habits than other geese. I have seen them frequently alight near the shore in salt water, and at other times on bare sand spits, as if in search of small shellfish. The body of this goose is scarcely larger than a mallard's. The specimen skinned was eaten afterwards, and found to be tender and juicy, with but little disagreeable fishy flavor. Their cry appears to be a feeble imitation of the honking of other geese, mixed with sundry noises resembling those of the "old squaws." I may have been deceived in this, as at the time I observed them with reference to their voices they were alarmed and rising, and there were probably some of the latter birds in the vicinity.

In flight this brant is more desultory than other species of geese. I noticed a flock, which probably contained five hundred individuals, which, in rising from the water, broke into twenty or thirty small companies, all apparently flying at random, and but few taking the wedge-shaped order of progression usual to wild geese.—S.

I was told by several gunners, at different times, of a small kind of brant occasionally seen, which was not much larger than a mallard, and had a white ring above the middle of the neck. It was said to keep to the middle of the bay, and to be difficult to shoot. On January 30, 1855, I saw four among a flock of the preceding species swimming near the mouth of the bay. They were about a third less in size, and did not show so much white in their plumage, but were too far off to be seen distinctly. I inquired of hunters in California, but they knew nothing of such a bird.—C.

Sub-Family ANATINAE.—True Ducks.

ANAS BOSCHAS, Linn.

Mallard; Green Head.

Anas boschas, Linn. Syst. Nat I, 1766, 205.—Wilson, Am. Orn, VIII, 1814, 112; pl. lxx.—Aud. Orn. Biog. III, 1835, 164; pl. 221.—Ib Syn. 276.—Ib. Birds Amer. VI, 1843, 236; pl. 385.—Baird, Gen. Rep. Birds, 774.

Anas (Boschas) domestica, Sw. F. Bor. Am. II, 1831, 442.—Nuttall, Man. II, 1834, 378.

Sp. Ch.—*Male:* Head and neck bright grass green, with violet gloss, the top of the head duller; a white ring round the middle of the neck, below which, and on the fore part and sides of the breast, the color is dark brownish chestnut. Under parts and sides, with the scapulars, pale gray, very finely undulated with dusky; the outer scapulars with a brownish tinge. Fore part of back reddish brown; posterior more olivaceous. Crissum and upper tail coverts black, the latter with a blue gloss. Tail externally white; wing coverts brownish gray, the greater coverts tipped first with white, and then more narrowly with black. Speculum purplish violet, terminated with black; a recurved tuft of feathers on the rump.

Female with the wing exactly as on the male. The under parts plain whitish ochrey, each feather obscurely blotched with dusky. Head and neck similar, spotted and streaked with dusky; the chin and throat above unspotted. Upper parts dark brown, the feathers broadly edged and banded with reddish brown, parallel with the circumference.

Length of male, 23; wing, 11; tarsus, 1. 79; commissure of bill, 2 50.

Hab.—Entire continent of North America, and greater part of Old World.

This duck is exceedingly common in the western portion of both Territories. It is especially abundant on the brackish marshes at the mouths of the Nisqually, and other rivers emptying into the sound.

By the Nisqually Indians it is called the "*Haht-haht*," in imitation of its note of alarm.—S.

The *mallard* is an abundant and resident species in the Territory, frequenting fresh water and small creeks near the sea as long as the ice does not drive it from its feeding grounds, when they sometimes return to the open bays. They build near their favorite waters, though I once saw a nest a quarter of a mile from any pond.—C.

DAFILA ACUTA, (Linn.) Jenyns.

Pintail; Sprigtail.

Anas acuta, Linn. Syst. Nat. I, 1766, 202.—Gmelin, I, 258.—Wilson, Am. Orn. VIII, 1814, f. 2; pl. lxviii.—Aud. Orn. Biog. III, 1835, 214: V, 615; pl. 227.—Ib. Syn. 279.—Ib. Birds Amer. VI, 1843, 266; pl. 390.

Phasianurus acutus, Wagler, Isis, 1832, 1235.

Anas (Dafila) acuta, Jenyns, Man. 1835, 232. Europ. sp.

Dafila acuta, Bon. List. 1838.—Baird, Gen. Rep. Birds, 776.

Anas (Boschas) acuta, Nuttall, Man. II, 1834, 386.

Anas caudacuta, Ray, Sw. F. Bor. Am. II, 1831, 441.

Sp. Ch.—Tail of 16 feathers. Bill black above and laterally at the base; the sides and beneath blue. Head and upper part of neck uniform dark brown, glossed with green and purple behind. Inferior part of neck, breast, and under parts, white; the white of neck passes up to the nape, separating the brown, and itself is divided dorsally by black, which, below,

passes into the gray of the back The back anteriorly and the sides are finely lined transversely with black and white. The wings are plain and bluish gray; the greater coverts with a terminal bar of purplish buff, below which is a greenish purple speculum, margined behind by black, and tipped with white. Longest tertials striped with silvery and greenish black. Scapulars black, edged with silvery; crissum and elongated tail feathers black; the former edged with white.

Female with only a trace of the markings of the wing; the green of the speculum brownish, with a few green spots. The feathers of the back are brown, with a broad U or V-shaped brownish yellow bar on each feather anteriorly. Sometimes those bars appear in the shape of broad transverse lines.

Length, 30 to 32 inches; extent, 27; wing, 11; tail, 8. 60; tarsus, 1.75; commissure, 2.36.

Hab.—Whole of North America and Europe.

The pintail duck is very abundant on the Columbia river, and also on the fresh water lakes near Puget Sound.—S.

While feeding this duck keeps up a constant gabble. It also, on certain ponds, dives much for its food, bringing up weeds, roots, &c., from the bottom, and, in this respect, somewhat resembling the canvas-back. It is not nearly so shy as the mallard, but more so than the widgeon or teal. It retires to the north early in the spring; this movement is so general, that during the breeding season scarcely a pair is to be seen near Puget Sound.

The pintail duck is found in immense numbers during the coldest winter weather, both in fresh and salt waters, though it seems to prefer the fresh when not frozen over.—C.

NETTION CAROLINENSIS, (Gm.) Baird.

Green-winged Teal.

Anas carolinensis, Gmelin, Syst. Nat. I, 1788, 533.—Aud. Syn. 1839, 281.—Ib. Birds Amer. VI, 1843, 281; pl. 392.—Reinhdt. Vid. Med. for 1853, (1854,) 84 (Greenland.)

Anas crecca, Wilson, Am. Orn. VIII, 1814, 101; pl. lxx.—Bon. Obs. No. 263.—Ib. Syn. 386 —Aud. Orn. Biog. III, 1853, 218: V, 616; pl. 228.

Anas (*Boschas*) *crecca*, Sw. F. Bor. Am. II, 1831, 400.—Nuttall, Man. II, 1834, 400.

Nettion carolinensis, Baird, Gen. Rep. Birds, 777.

Sp. Ch.—Head and neck all round chestnut; chin black; forehead dusky. Region round the eye, continued along the side of the head as a broad stripe, rich green, passing into a bluish black patch across the nape. Under parts white, the feathers of the jugulum with rounded black spots. Lower portion of neck all round, sides of breast and body, long feathers of flanks and scapulars beautifully and finely banded closely with black and grayish white. Outer webs of some scapulars, and of outer secondaries black, the latter tipped with white; speculum broad and rich green; wing coverts plain grayish brown, the greater coverts tipped with buff. A white crescent in front of the bend of the wing; crissum black, with a triangular patch of buffy white on each side. Lower portion of the green stripe on each side of the head blackish, with a dull edge of whitish below.

Female with the wings as in the male. The under parts white, with hidden spots on the jugulum and lower neck; above dark brown, the feathers edged with gray; iris brown; feet pale gray.

Length, 14 to 15 inches; extent, 24 50; wing, 7.40; tarsus, 1.14; commissure, 1.68.

Hab.—Whole of North America; accidental in Europe.

Extremely abundant in the same situations that the mallard, pintail, and widgeon, are found in. In winter on the northwest coast, as elsewhere, the males and females are found in separate flocks.—S.

The green-winged teal arrives from the south in March, and frequents fresh ponds chiefly, breeding in the Territory. Some, perhaps, remain during mild winters.—C.

QUERQUEDULA CYANOPTERA, (Vieill.) Cassin.

South American, Cinnamon, or Red-breasted Teal.

Anas cyanoptera, Vieillot, Nouv. Dict. V, 1816, 104.

Querquedula cyanoptera, Cassin, Illust. I, iii, 1855, 84; pl. xv.—Baird, Gen. Rep. Birds, 780.

Anas rafflesii, King, Zool. Jour. IV, 1828, 87.

Pterocyanea rafflesii, Baird, Zool. Stansbury's Exp. Salt Lake, 1852, 322.

Sp. Ch.—*Male:* General color a rich dark purplish chestnut, the top of the head, the chin, and middle of belly, tinged with brown. Crissum dark brown. Fore part of the back lighter, with two or three more or less interrupted eccentric bars of dark brown. The feathers of rump and tail greenish brown; the former edged with paler. Wing coverts and outer webs of some scapulars blue; others dark velvet green, streaked centrally with yellowish buff. Edges of greater wing coverts white, as are the axillars and middle of wing beneath. Feathers of flanks uniform chestnut, without bands. Speculum metallic green.

Female with the top of the head dusky and the wing coverts blue, as in the male; the speculum duller. The upper parts dark brown, with lighter edges to the feathers. The under parts are brownish yellow, with a strong tinge of purplish chestnut in the jugulum, the feathers with concealed spots of brown. The only feathers unspotted with brown on the head and neck are in small patches on each side of the base of the bill, and in the chin between the rami. There is an obscure dusky patch beneath the head.

Length, 17.80; wing, 7.50; tarsus, 1.15; commissure, 2.

Hab.—Rocky mountains to Pacific; as far north as the Columbia; accidental in Louisiana; spread over most of western South America.

The South American or red-breasted teal is mentioned by Professor Baird in Stansbury's Report on the United States Exploring Expedition of the Great Salt Lake, as being obtained in that vicinity by Captain Stansbury's party, and as having once before been obtained in Louisiana. Since then many naturalists have demonstrated the abundant existence of this species throughout California. I myself have carried its recorded habitat as far north as the Columbia river, where, at Fort Dalles, in 1855, I obtained several specimens of the species. Fort Dalles is situated on the Columbia river, about latitude 46° 45′ N. I presume this forms the most northernmost limit of the species, excepting, perhaps, a narrow point of the same general geographic region which, crossing the Columbia, extends north of Fort Dalles about 100 miles. This is the culmination northwards of the great wedge-shaped northern prolongation of the southern Fauna, occurring in the arid interior of Oregon and Washington Territories.

Near Fort Dalles this teal seems to be an annual summer resident, where it breeds on the lagoons of the Columbia and near the small lakes and pond-holes in the basaltic trap of the vicinity. It seems much less shy than the other wild ducks generally are.

The flesh of this duck compares favorably with that of any other kind. In the San Francisco market it is commonly known as the *cinnamon teal.* The dingy spot on the breast and belly of the male bird is *not* constant; I have killed them both with and without it.—S.

SPATULA CLYPEATA, (Linn) Boie.

Shoveller; Spoonbill.

Anas clypeata, Linn, Syst. Nat. I, 1766, 200.—Gmelin, I, 518.—Lath. Ind II, 1790, 856.—Wilson, Am. Orn. VIII, 1814; pl. lxvii.—Sw. F Bor. Am. II, 1831, 439.—Aud. Orn. Biog. IV, 1838, 241; pl. 327.—Ib. Syn. 283.—Ib Birds Amer. VI, 1843, 293; pl. 394.

Spatula clypeata, Boie, Isis, 1822, 564.—Baird, Gen. Rep. Birds, 781.

Anas (*Spathulea*) *clypeata*, Nutt Man. II, 1834, 373.

Sp. Ch.—Head and neck green; fore part and sides of the breast, with greater portion of scapulars, and the sides of the base of the tail, white; rest of under parts dull purplish chestnut; crissum, rump, and upper tail coverts, black, the latter glossed with green. Wing coverts blue; the posterior row brown in the concealed portion, and tipped with white; longest tertial blue, streaked internally with white; others velvet green, streaked centrally with white; speculum grass green, edged very narrowly behind with black and then with white.

Female with the wing similar, but with the blue of coverts and scapulars less distinct. Head and neck brownish yellow spotted with dusky; the belly with a decided chestnut tinge.

Length, 20 00; wing, 9.50; tarsus, 1.38; commissure, 3.02.

Hab.—Continent of North America; abundant in Europe.

The Shoveller or Micoine is rather abundant on the Pacific coast, where I have obtained specimens both at San Francisco and Puget Sound.—S.

The shoveller seems to be only a winter visitor in the Territory, arriving in October and leaving with most of the winter ducks in March or April.—C.

CHAULELASMUS STREPERUS, (Linn.) Gray.

Gadwall; Gray Duck.

Anas strepera, Linn. Syst. Nat. I, 1766, 200.—Gmelin, I, 520.—Lath., Ind. II, 1790, 849.—Wilson, Am. Orn. VIII, 1814, 120; pl. lxxi.—Bon. Obs. 1825, No. 257.—Aud. Orn. Biog. IV, 1838, 353; pl. 348.—Ib. Syn. 378.—Ib. Birds Amer. VI, 1843, 254; pl. 388.—Temminck, Man. II, 838 (European.)

Anas (*Chauliodus*) *strepera*, Swainson, F. Bor. Am. II, 1831, 440.

Anas (*Boschas*) *strepera*, Nutt. Man II, 1834, 383.

Baird, Gen Rep. Birds, 782.

Sp. Ch.—*Male:* Head and neck brownish white, each feather spotted with dusky; the top of head tinged with reddish. Lower part of neck, with fore part of breast and back, blackish, with concentric narrow bars of white, giving a scaled appearance to the feathers. Interscapular region, outermost scapulars, and sides of the body finely waved transversely with black and white. Middle wing coverts chestnut, the greater velvet black, succeeded by a pure white speculum, bordered externally by hoary gray, succeeded by black; crissum and upper tail coverts black. Longest tertials hoary plumbeous gray. Innermost scapulars with a reddish tinge. Inside of wing and axillars pure white. Bill black.

Female with the bill dusky, edged with reddish. Wing somewhat like that of the male, but with the chestnut red more restricted. Length, 22; wing, 10.50; tarsus, 1.64; commissure, 2 04.

Hab.—North America generally, and Europe.

This bird is found sparingly on Puget Sound. In 1854 I was fortunate enough, through the kindness of George Gibbs, esq., to obtain a beautiful specimen of the adult male in perfect mature plumage, which was killed in the vicinity of Port Townsend, Puget Sound. A beautiful specimen of this species I saw in March, 1857, in the interesting collection of Mr. Gruber, an enthusiastic taxidermist residing in San San Francisco. In both specimens (Mr. Gruber's and my own) the chestnut-red patch on the wing is strongly marked.

In following the line of the survey of the proposed northern route for a Pacific railroad across the continent, most of which fell between the 46th and 48th parallels of north latitude, our party passed through the breeding grounds of vast numbers of ducks. Minnesota, as its Sioux name implies, means the "land of water," (*Minne*, water, *sota*, land or country,) and so, indeed, it is. For 250 miles west of the Mississippi river we were scarcely ever out of sight of some lake or pond, and frequently within the scope of our vision might be seen between 15 and 20 lying around us in different directions, varying in size from that of small pools to that of lakes a mile or more in length. These lakes, all were more or less adapted as breeding places for many species of this family, and, from the numbers of ducks found upon them, their natural advantages did not seem to be neglected. The species were principally mallards and teal, although the gadwall and several others were not uncommon.—S.

MARECA AMERICANA, (Gmel.) Stephens.

Baldpate; American Widgeon.

Anas americana, Gmelin, Syst. Nat. I, 1788, 526.—Wilson, Am. Orn. VIII, 1814, 86; pl. lxix.—Bon. Obs. No. 259.—Aud. Orn. Biog. IV, 1838, 337; pl. 345.—Ib. Syn. 1839, 279.

Mareca americana, Steph. Shaw's Gen. Zool. XII, ii, 1824, 135.—Sw. F. Bor. Am. II, 1831, 445.—Bon. List, 1838.—Baird, Gen. Rep. Birds, 783.

Anas (*Boschas*) *americana*, Nuttall, Man. II, 1834, 389.

Sp. Ch.—*Male.*—Tail of 14 feathers. Bill blue, the extreme base and tip black. Head and neck pale buff, or faint reddish yellow, each feather banded narrowly with blackish, so as to give the appearance of spots. The top of the head from the bill is pale, unspotted, creamy white; the sides of the head, from around the eye to the nape, glossy green, the feathers, however, with hidden spots, as described; chin uniform dusky. Fore part of breast and sides of body light brownish or chocolate red, each feather with obsolete grayish edge; rest of under parts pure white; the crissum abruptly black. The back, scapulars, and rump, finely waved transversely anteriorly with reddish and gray, posteriorly with purer gray, on a brown ground; a little of the same waving also on the sides. The lesser wing coverts are plain gray; the middle and greater are conspicuously white, the latter terminated by black, succeeded by a speculum, which is grass green at the base, and then velvet black. The tertials are black on the outer web, bordered narrowly by black, the outermost one hoary gray, externally edged with black. The tail is hoary brown. The upper coverts are black externally. The axillars are white.

The female has the head and neck somewhat similar, but spotted to the bill. Wings as in the male. The black of tertials replaced by brown; the gray of the lesser coverts extending slightly over the middle ones. Back and scapulars with rather broad and distant transverse bars of reddish white, each feather with two or three, interrupted along the shafts. These are much wider and more distant than in the male. Length, 21.75; wing, 11; tarsus, 1.42; commissure, 1.80.

Hab.—Continent of North America. Accidental in Europe.

The widgeon is abundant in the same situations as the pintail, and at Fort Dalles they are more common than any other species. I shot them occasionally in the rock lagoons just above Dallestown, where I found them much more readily approachable than other species, with the exception of teal. They breed on the small lakes of central Oregon in moderate numbers, and on the northwest coast generally; seem to be next in abundance to the mallard among the fresh water ducks.—S.

AIX SPONSA, (Linn.) Boie.

Summer Duck.

Anas Sponsa, Linn. Syst. Nat. I, 1766, 207.—Gm. I, 539.—Lath. Ind. II, 1790, 876.—Wilson, Am. Orn. VIII, 1814 97; pl. lxx.—Bon. Obs. No. 261.—Aud. Orn. Biog. III, 1835, 52: V, 618; pl. 206.—Ib. Syn. 280.—Ib. Birds Amer. VI, 1843, 271; pl. 391.

Aix sponsa, Boie, Isis, 1828, 329.—Baird, Gen. Rep. Birds, 785.

Anas (Boschas) sponsa, Nuttall, Man. II, 1834, 394.

Sp Ch.—Head and crest metallic green to below the eyes; the cheeks and a stripe from behind the eye purplish. A narrow short line from the upper angle of the bill along the side of the crown and through the crest, another on the upper eyelid, a stripe starting behind and below the eye, and running into the crest parallel with the first mentioned, the chin and upper part of the throat, sending a well defined branch up towards the eye and another towards the nape, snowy white. Lower neck and jugulum, and sides of the base of tail, rich purple; the jugulum with triangular spots of white and a chesnut shade. Remaining under parts white, as is a crescent in front of the wing bordered behind by black Sides yellowish gray, finely lined with black; the long feathers of the flanks broadly black at the end, with a sub-terminal bar, and sometimes a tip of white. Back and neck above nearly uniform bronzed green and purple. Scapulars and innermost tertials velvet black, glossed on the inner webs with violet; the latter with a white bar at the end. Greater coverts violet, succeeded by a greenish speculum, tipped with white. Primaries silvery white externally towards the end; the tips internally violet and purple.

Female with the wings quite similar; the back more purplish; the sides of the head and neck ashy; the region round the base of the bill, a patch through the eyes, and the chin, white. The purple of the jugulum replaced by brownish. The waved feathers on the sides wanting. Male: length, 18 to 19 inches; extent, about 28; wing, 9.50; tarsus, 1.40; commissure, 1.54; iris red; bill yellow and black; feet grayish.

Hab.—Continent of North America.

The wood duck is found sparingly in Washington and Oregon Territories, where I obtained summer specimens at Fort Steilacoom, and winter birds at Fort Dalles. In habits the bird in Oregon does not differ from those found in the middle States.—S.

The summer or wood duck is a summer resident, only arriving in April and leaving about October. Its nests and young are often found in the woods of the interior, but it seems to visit the coast very rarely.—C.

Sub-Family FULIGULINAE.—The Sea-Ducks.

FULIX MARILA, (Linn,) Baird.

Big Black-head; Scaup Duck; Broadbill.

Anas marila, Linn. Syst. Nat. I, 1766, 196.—Gm. I, 1788, 509.—Wilson, Am. Orn. VIII, 1814, 84; pl lxix.

Fuligula marila, Steph. Shaw's Gen. Zool. Birds XII, II, 1824, 198.—Bon. List, 1838.—Aud. Birds Am. VII, 1843, 355; pl. 498.—Giraud, Birds L. Island, 1844, 321. (*marila.*)

Aythya marila, Bon. List, Birds Europe, 1842.

Fulix marila, Baird, Gen. Rep. Birds, 791.

Sp. Ch.—Head and neck all round, jugulum and shoulders, lower part of back, tail, and coverts black; the head with a gloss of dark green on the sides. Rest of under parts white; feathers on the lower part of belly and on the sides, the long feathers of the flanks, the interscapulum, and the scapulars, white, waved in zigzag transversely with black. Greater and middle wing coverts similarly marked, but more finely and obscurely. Greater coverts towards the tip, and the tertials, greenish black; the speculum is white, bordered behind by greenish black; the white extending across the whole central portion of the secondaries. Outer primaries and tips of all brownish black; inner ones pale gray; the central line dusky. Axillars and middle of the inferior surface of the wing white. Bill blue black. Legs plumbeous.

Female with the head brown; the region all round the base of the bill white; the undulations of black and white on the feathers wanting, or but faintly indicated above. Length, 20; wing, 9; tarsus, 1. 58; commissure, 2. 16.

Hab.—Whole of North America and Europe.

The scaup duck is abundant all along the north Pacific coast during the cold months. Several specimens were obtained at Fort Steilacoom.—S.

The scaup duck is a winter species, associating with the golden eye, and others, in creeks and bays, from October till April.—C.

AYTHYA VALLISNERIA, (Wilson,) Bonap.

Canvas-back.

Anas vallisneria, Wilson, Am. Orn. VIII, 1814, 103; pl. lxx.

Fuligula vallisneria, Stephens, XII, 1824, 196.—Sw. F. Bor. Am. II, 1831, 451.—Nuttall, Man. II, 430.

Aythya vallisneria, Bon. List, 1838.—Newberry, Rep. P. R. R. VI, IV, 1857, 103.—Baird, Gen. Rep. Birds, 794.

Fuligula vallisneriana, Aud Orn. Biog. IV, 1838, 1; pl. 301.—Ib. Syn. 1839.—Ib. Birds. Amer. VI, 1843, 299; pl. 395.

Sp. Ch.—Bill long, slender, and tapering. Head all round and neck chestnut; the top of the head and region around the base of the bill dusky brown. Rest of neck, body anterior to the shoulders, back behind, rump and tail coverts, black. Under parts white; the region anterior to the anus, the sides, the interscapulars and scapulars, white, finely dotted in transverse line with black, the white greatly predominating. Speculum bluish gray, lighter externally; the innermost secondaries of the speculum edged externally with black.

Female with the black and chestnut replaced by brown, the cheeks and chin lighter, and some tinged with dull rufous.

Length, 20. 10; wing, 9. 30; tarsus, 1. 70; commissure, 2. 65.

Hab.—Whole of North America.

The canvas-back duck is found sparingly during the autumn and winter at Fort Dalles, O. T., and at Puget Sound. It is much more abundant in the vicinity of San Francisco, where immense numbers are brought every winter to the markets.—S.

The canvas-back duck is abundant during winter in the bays and rivers; frequenting the Columbia a hundred miles from its mouth.—C.

BUCEPHALA AMERICANA, (Bonap,) Baird.

Golden Eye; Whistle Wing.

Anas clangula, Forster, Philos. Trans. LXII, 1772, 365.—Wilson, Am. Orn. VIII, 1814, 62; lxvii.

Fuligula (Clangula) clangula, Bon. Syn. 1828, 393.—Nutt. Man. II, 441.

Fuligula clangula, Aud. Orn. Biog. IV, 1838, 318; pl. 342.—Ib. Birds Amer. VI, 1843, 362; pl. 406.

Clangula vulgaris, Sw. F. Bor. Am. II, 1831, 456. Not of Fleming.

Clangula americana, Bonap. Comp. List, 1838.—Eyton, Mon. Anat. 1838, 167.

Bucephala americana, Baird, Gen. Rep. Birds, 796.

Sp. Ch.—Bill black. Head and upper part of neck glossy green; the under surface opaque velvety purplish black. An elliptical patch along the base of upper mandible anterior to the eye, lower part of neck, under parts generally, and sides, middle and greater wing coverts, the innermost secondaries (and tertials, except the innermost three or four) white. The white on the wing is in a continuous patch, although there is a concealed black bar on the bases of the greater coverts. The inner scapulars are white, margined externally with black, posteriorly, however, they are black, streaked centrally with white. The inner scapulars and tertials, and the whole back, rump, and lesser wing coverts are black; the primaries and tail black, with a hoary gloss. The under side of quills and lower greater coverts are plumbeous gray; the rest of the under wing and the axillars are sooty brown. The long white feathers of the flanks are edged superiorly with black.

Female with the head and neck above snuff brown, without white patch. White of wing less extended; the middle coverts only touched with white. There is a tendency to a black bar across the tips of the greater coverts. The white of the wing sometimes well defined.

Length, 18. 75; wing, 8. 50; tarsus, 1. 50; commissure, 2.

Hab.—Whole of North America.

Specimens of the golden eye duck were obtained by me on Puget Sound, and a female of the same in the second chain of Rocky mountains, (Bitter Root range.) Barrow's golden eye I was unable to identify, although, according to Nuttall, they are common to the Rocky mountains. It seems odd that a nearly identical, yet different, species of duck should be surrounded east and west by its near representative.—S.

The golden eye is very abundant in bays during the winter and early spring. I have only observed the common species among many specimens examined.—C.

BUCEPHALA ALBEOLA, (Linn.) Baird.

Butter Ball; Dipper; Buffle Head.

Anas albeola, Linn. Syst. Nat. I, 1766, 199.—Gmelin, I, 517.—Wilson, Am. Orn. VIII, 1814, 51; pl. lxvii.

Fuligula (Clangula) albeola, Bon. Syn. 1828, 394.—Nutt. Man. II, 445.

Fuligula albeola, Aud. Orn. Biog. IV, 1838, 217; pl. 325.—Ib. Syn. 1839, 293.—Ib. Birds Amer. VI, 1843, 369; pl. 408.

Bucephala albeola, Baird, Gen. Rep. Birds, 797.

Sp. Ch.—*Male.*—Bill blue. Head and neck anteriorly dark colored; the region in front of the eye and on the sides of the collar behind rich green; this color shading into purplish on the upper and under surfaces of the head; a broad patch on each side of the head from the posterior border of the eye, and meeting its fellow on the nape, the lower neck all round, under parts generally, wing coverts, (except the lesser,) and most of the secondaries, and the scapulars, white; the latter narrowly edged externally with black. Rest of upper parts, except as described, black; passing gradually on the upper tail coverts into pale gray. Axillars and under wing coverts sooty brown, more or less tipped with white.

Female with the entire head, neck, and upper parts almost black. An elongated patch behind and below the eye, (not reaching it.) The outer webs of some secondaries, and the under parts, white; the jugulum, sides, and anal region, plumbeous gray.

Length, 15; extent, 23 to 25; wing, 6.65; tarsus, 1.25; commissure, 1.44.

This duck is extremely abundant throughout the length and breadth of Washington Territory. I observed them on the Rocky Mountain streams, and also upon the salt waters of Puget Sound. They seem to repair indiscriminately to fresh, salt, and brackish waters, and

to have but little choice whether they alight in muddy pools, quiet millponds, running brooks, or in the surf of the ocean. At Fort Steilacoom, where this species first arrives from the north in the fall, the individuals are very fat, and in good order for the table. At this time they are not at all shy; but by mid-winter they are generally lean, tough, and unsavory; and, probably on account of their great powder experience, are much more shy and wary. As divers they almost equal the dab-chick in dexterity. I once saw a male that I had just wounded dive in clear water, and, seizing hold, by its bill, of a root growing under water, remain voluntarily submerged for almost five minutes, until he supposed all danger past, when, again ascending to the surface, he paddled off with great rapidity. It is said that *loons* also possess this instinctive cunning, and frequently, when wounded, seize hold of eel grass, &c., on the bottoms of ponds, &c., where occasionally, becoming entangled, they die.—S.

The buffle head, or butter duck, is only a winter resident, though it remains as late as May. They frequent both fresh and salt waters, and seem especially fond of rapid rivers.—C.

HISTRIONICUS TORQUATUS, Bonap.

Harlequin Duck.

Anas histrionica, Linn. Syst. Nat. ed. 10, I, 1758, 127; ed. 12th, I, 1766, 204.—Gmelin, I, 534.—Lath. Ind. Orn. II, 1790, 849.—Wilson, Am. Orn. VIII, 1814, 139; pl. lxxii.

Fuligula (Clangula) histrionica, Bon. Syn. 1828, 394.—Nuttall, Man. II, 448.

Fuligula histrionica, Aud. Orn. Biog. III, 1835, 612: V, 1839, 617; pl. 297.—Ib. Syn. 1839, 294.—Ib. Birds Amer. VI, 1843, 374; pl. 409.

Clangula histrionica, Swainson, F. Bor. Am. II, 1831, 489.

Histrionicus torquatus, Bonap. Comptes Rendus, XLIII, Sept. 1856.—Baird, Gen. Rep. Birds, p. 799.

Sp. Ch.—*Male.* Head and neck all round dark blue. Jugulum, sides of breast, and upper parts, lighter blue, becoming bluish black again on the tail covers. The blue of breast passes insensibly into dark bluish brown behind. A broad stripe along the top of head from the bill to the nape, and the tail feathers, black. A white patch along the entire side of the base of bill anterior to the eye, and passing upwards and backwards so as to border the black of the crown, but replaced from above the eye to the nape by chestnut. A round spot on the side of the occiput, an elongated one on the side of the neck, a collar round the lower part of the neck, interrupted before and behind, and margined behind by dark blue, a transversely elongated patch on each side of the breast, and similarly margined, a round spot on the middle wing coverts, a transverse patch on the end of the greater coverts, the scapulars in part, a broad streak on the outer web of tertials, and a spot on each side the rest of the tail, white; sides of body behind chestnut brown. Secondaries with a metallic speculum of purplish or violet blue. Inside of wing, and axillars, dark brown.

Female with the head and body above, dark brown; the chin more plumbeous; the lower part of neck, breast, and under parts generally, except the central region, (which is white,) duller and lighter brown; a whitish patch in front of the eye, and a rounded spot just behind the ear.

Length, 17.50; wing, 7.70; tarsus, 1.48; commissure, 1.54.

Hab.—Northern seacoast of northern hemisphere.

The beautiful harlequin duck is, in winter, found sparingly on Puget Sound, where I obtained three specimens; one of which, in most beautiful plumage, was presented to me by Lieutenant Murden, of the United States revenue service, a gentleman to whom I was indebted for many similar favors in other branches of natural history. It seems, when not breeding, to be almost exclusively a salt water species, and, although Puget Sound is almost as salt at its head as it is near the ocean, it is rarely found more than eighty miles from its mouth, *i. e.*, about half way up, where the sound is still wide, thus showing a predilection for rough water, and no special liking for the placid waters of the quiet inlets and coves near its head.—S.

HARELDA GLACIALIS, (Linn.) Leach.

South Southerly; Old Wife; Long-tail.

Anas glacialis, Linn. Syst. Nat. I, 1766, 203.—Forster, Phil. Trans. LXII, 1772, 418 —Wilson, Am. Orn. VIII, 1814, 93, 96; pl. lxx.

Harelda glacialis, "Leach."—Stephens, Shaw's Gen. Zool. XII, 1824, 175.—Sw. F. B. Am. II, 1831, 460.—Bon. List, 1838.—Baird, Gen. Rep. Birds, 800.

Fuligula (Harelda) glacialis, Nutt. Man. II, 1834, 453.

Fuligula glacialis, Aud. Orn. Biog. IV, 1838, 403; pl. 312.—Ib. Syn. 1839, 295.—Ib. Birds Amer. VI, 1843, 379; pl. 410.

Anas hyemalis, Linn. I, 1766, 202.—Forst. Phil. Tr. LXII, 1772, 418.—Gmelin, I, 529.

Sp. Ch.—*Male in summer.*—Bill black, orange yellow towards the tip. Head, neck, and breast very dark blackish brown; the head above, back, rump, and middle tail feathers, black. The whole side of the head, from the bill and to behind the eyes, and the sides of the body, pale bluish gray; the portion of the cheek patch immediately around and behind the eye, with a longitudinal streak each side the occiput; the under parts generally, and the more external tail feathers, white. Feathers on the fore part of the back, with the scapulars, broadly edged with light reddish brown; under wing coverts and axillars brownish chocolate. No white whatever on the wing.

Male in winter.—Differs from summer dress in having the head and neck white to the jugulum and interscapular region. The gray of the cheeks persistent, and a broad patch of black on the sides of the neck behind this. The scapulars are pale pearl gray. Iris pale brown.

Female.—Lacks the long points to the tail and scapulars. The head and neck dusky, with a whitish patch around the eye and on the sides of the neck behind.

Length, 20. 75; wing, 8. 90; tail, 8. 00; tarsus, 1. 38; commissure, 1. 62. Extent of wings about 30 inches.

Hab.—Along both coasts of North America. Europe.

The long-tailed duck, "old wife," or "south southerly," remains in the Territory only during the coldest winter months, leaving for the north in March. They are found only in open bays.—C.

The "old squaw" is very common in winter on the lower part of Puget Sound and on Admiralty inlet. I am sorry that the only specimen I attempted to preserve was accidentally destroyed.

The Indians living along the Straits of Fuca look to the arrival of the various species of wild ducks as a certain harvest. They destroy vast numbers by shooting with shot, and, when short of ammunition, with forked arrows. They also obtain them in great quantities by stretching long nets on a line suspended on poles, which are about half as far apart and look much like the telegraph poles of the older States. These poles are erected on the long sand spits running out from points, and dividing bays along the straits. Upon these the nets are stretched at nightfall, and, being directly in the course of the flight of the birds from bay to bay and point to point, immense numbers are taken at certain seasons. This plan of capturing ducks was much more extensively practiced formerly than at present. The same Indians save large quantities of wild duck and geese feathers, which are readily bought up by the traders for about twelve cents a pound, and resold by them in San Francisco at a profit of several hundred per cent.

Some tribes of Indians, especially the Lummis and Scadgetts, have a habit of obtaining ducks at night by "fire hunting," with canoes and lights, much in the same manner that deer are killed in certain districts. The ducks, dazzled and bewitched by the light, allow it to approach so near that they are killed with arrows and spears. It is not unusual thus to take a good sized canoe-load in a single night. By this method fire-arms should not be used; but the arrow or spear, doing its work noiselessly, is alone to be relied on.—S.

MELANETTA VELVETINA, (Cass.) Baird.

Velvet Duck; White-winged Coot.

Anas fusca, Wilson, Am. Orn. VIII, 1814, 137; pl. lxxii. Not of Linnaeus.

Fuligula (Oidemia) fusca, Bon. Syn. 1828, 390.—Nutt. Man. II, 1834, 419.

Fuligula fusca, Aud. Orn. Biog. III, 1835, 454; pl. 247.—Ib. Syn. 1839, 280.—Ib. Birds Amer. VI, 1843, 332; pl. 401.

Oidemia velvetina, Cassin, Pr. A. N. Sc. V, Oct. 1850, 126.

Melanetta velvetina, Baird, Gen. Rep. Birds, 805.

Sp. Ch.—*Male.*—Bill very broad, wider towards thetip than at the base; feathers extending far along the side of the bill, and on the forehead, for nearly half the commissure, running in an obtuse point about as far forward as the lower corner of the outline of feathers on the side, both reaching nearly to the posterior border of the large, open, nearly rounded nostrils; culmen horizontal a little beyond the frontal feathers, then abruptly bent downwards, nearly perpendicularly, to the much depressed, nearly horizontal portion; a sharp indented ridge along the base of culmen, ending in a trihedral tubercle. Color black; a white elongated patch around and a little behind the eye, and a large white speculum on the wing composed of white secondaries and tips of greater coverts; bill black at base and lateral edges; red elsewhere.

Female somewhat similar, but lighter beneath, and smaller; a large whitish patch on the side of the head behind the eye, but none around it; wings with white speculum, somewhat as in the male; bill also similar, but less swollen and elevated at base. Length, from 20 to 23 inches; extent, from 36 to 39. 25; wing, 10. 16 to 12; tarsus, 2. 08; commissure, 2. 82. Iris of the male, pale gray, or grayish white; of the female, *brown*.

Hab.—Along both coasts of North America, to the north.

The white-winged coot, or velvet duck, is common in winter in all the bays and inlets of Puget Sound. I obtained four or five specimen at Fort Steilacoom. In common with other of the dark colored, fishy, sea ducks, it is called by the Nisqually Indians *kwal'-hoo*. They arrive in that vicinity about the middle of October, and continue plentiful until about the 1st of April, when they nearly all disappear. They are almost always found on salt water, but I have occasionally heard of one being killed inland. When fat they rise from the water with difficulty, beating it with their wings for a long distance. The flesh is oily, and possesses a strong, and to many a disagreeable, fishy flavor. This is, however, much prized by the Indians, who, for eating, prefer them to mallards.—S.

The black or velvet scoter is common in winter about bays and estuaries, together with the other two species of surf duck, but none of them seem to breed in the Territory, though a few linger in the bays all summer, which may be superannuated specimens.—C.

PELIONETTA PERSPICILLATA, Kaup.

Surf Duck; Sea Coot.

Anas perspicillata, Linn. Syst. Nat. I, 1766, 201.—Wilson, Am. Orn. VIII, 1814, 49; pl. lxvii.

Fuligula (Oidemia) perspicillata, Bon. Syn. 1828, 389.—Nuttall, Man. II, 416

"*Pelionetta perspicillata*, Kaup," Reich. Icones Av.—Bonap. Comptes Rendus, XLIII, Sept. 1856.—Baird, Gen. Rep. Birds, 806.

Fuligula perspicillata, Aud. Orn. Biog. IV, 1838, 161; pl. 317.—Ib. Syn. 289.—Ib. Birds Am. VI, 1843, 337; pl. 402.

Sp. Ch.—*Male.*—Tail of 14 feathers. Bill but little longer than the head, the feathers extending forward half way from the base to the tip, and opposite the posterior border of the nostril; the bill abruptly decurved or gibbous anterior to the end of the feathers; nostrils open, nearly semicircular or stirrup shaped, the straight portion of the outline antero-inferior; sides of bill swollen at the base so as to be further apart above than below.

Color entirely black throughout, with a greenish lustre above, duller beneath; a triangular white patch on the top of head, the base extending between the posterior outline of the eye and reaching forward to a point a little beyond the posterior line of the bill, the outlines rounded laterally and anteriorly; the patch is separated from the eye by a narrow superciliary black space. There is a second triangular white patch beginning on the nape as a straight line, the width of the other patch, and running backwards for more than two inches. These triangular spaces are thus base to base. Iris white; bill and feet variegated.

Female.—Bill as long as that of the male, but not swollen at the base, where the sides approach each other above; the feathers

of forehead do not extend one-third the distance from base to tip of bill; the middle of nostril not quite as far as the middle of the bill; nostrils linear, acutely pointed anteriorly.

Color brown; lighter on the neck. Sides and beneath the under surface of the body whitish. An obscure whitish patch at the base of the bill, and another on the side of the head behind the eyes.

Length of male, 19.00 to 20.00; wing, 9.40; extent, 33; tarsus, 1.63; commissure, 2.37.

Hab.—On and near the seacoast of North America, quite far south in winter. Accidental in Europe.

A fine *albino* specimen of this duck is in the collection of Mr. F. Gruber, at San Francisco.

The sea coot is quite common in winter on Puget Sound, where it frequents the same localities as the preceding species, and has much the same habits as elsewhere. I obtained several specimens at Fort Steilacoom.—S.

The surf duck or spectacled scoter frequents the same situations as the preceding in winter.—C.

OIDEMIA AMERICANA, Swainson.

Scoter.

Anas nigra, Wilson, Am. Orn. VIII, 1814, 135; pl. lxxii. Not of Linnaeus.

Anas (*Fuligula*) *nigra*, Bon. Obs. Wilson, 1825, No. 267.

Fuligula (*Oidemia*) *nigra*, Bon. Syn. 1828, 390.

Oidemia americana, Swainson, F. Bor. Am. II, 1831, 450.—Bon. List, 1838.—Baird, Gen. Rep. Birds, 807.

Fuligula americana, Aud Orn. Biog. V, 1839, 117; pl. 408.—Ib. Syn. 290.—Ib. Birds Amer. VI, 1843, 343; pl. 403.

Sp. Ch.—*Male.*—Tail of sixteen feathers. Bill much swollen on the basal third: the basal portion of culmen convex and rapidly descending; the terminal portion of bill much depressed; the anterior extremity of nostrils half way from the lateral or upper feathers at the base of bill to the tip The swelling at base of bill divided by a furrow along the median line. The frontal feathers extend slightly forward in an obtuse point. Bill of female not very dissimilar, lacking the swellwing at the base.

Color entirely black all over, without any white. Bill black along the edges and tip; the swollen basal portion red to beyond the nostrils.

Female.—Brown; lighter on sides of head, throat, and under surface of body, where the feathers have each an obscure dusky spot.

Length, 23.80; wing, 9.20; tarsus, 1.78; commissure, 2.14.

Hab.—Seacoast of North America.

The American scoter is less common than the other kinds, and has the same habits.—C.

The scoters generally arrive from the north in the bays and inlets of Puget Sound about October 1, remaining in greater or less numbers throughout the winter. Their flight is low, labored, and heavy; their journeys appearing to be carried on, for the most part, by short stages. In these characteristics they resemble closely the two preceding species. They also are excessively fat in winter, and have a disagreeable, strong odor, and fishy taste. A specimen obtained by me at Fort Steilacoom is now in the Smithsonian collection, marked 4,574.—S.

Sub-family MERGINAE. The Sheldrakes.

MERGUS AMERICANUS, Cassin.

Goosander; Sheldrake; Fish Duck.

Mergus merganser, Wils. Am. Orn. VIII, 1814, 68; pl. lxviii.—Sw. F. Bor. Am. II, 1831, 461.—Nutt. Man. II, 1834, 460.—Aud. Orn. Biog. IV, 1838, 261; pl. 331.—Ib. Syn. 1839, 297.—Ib. Birds Amer. VI, 1843, 387; pl. 411.

Mergus americanus, Cassin, Pr. A. N. Sc. VI, 1853, 187.—Baird, Gen. Rep. Birds, 813.

Merganser castor, var. *A. americanus*, Bon. Comptes Rendus, XLIII, 1856.

Sp. Ch.—Feathers of the forehead extending on the bill in an acute angle for half the distance between those on the sides

and the nostril; outline of those on the sides nearly vertical and reaching but little beyond the beginning of lower edge of bill, but as far as those on the side of lower jaw. Nostril large, far forward, its middle opposite the middle of the commissure.

Male.—Head without conspicuous crest. Head and neck green. Fore part of back black; beneath salmon color. Wings mostly white, crossed by one band of black. Sides scarcely barred transversely.

Female.—Head with a compressed occipital crest. Head and neck chestnut. Above ashy; beneath salmon colored. White of greater coverts with a terminal bar of ashy, (sometimes wanting;) the black of base of secondaries entirely concealed. Outer tertials, ash.

Length, 26.50; wing, 11.00; tarsus, 1.84; commissure, 2.90.

Hab.—Whole of North America.

The American sheldrake or merganser is abundant during the warmer months, and some even remain all winter, leaving their favorite rivers for the open bays. They are found, in summer, in almost every small lake and mountain stream, though the males are not so often seen there as the females, with their broods of young. In September the young, being fully fledged, associate in flocks of several hundreds, in which I have never seen any adult males. In January these last are seen in small flocks by themselves, with the head and neck in perfect green plumage.—C.

The common goosander or American sheldrake is very frequently found near Fort Steilacoom and upon the Columbia river in winter. They are very widely distributed throughout both Territories. I shot a female in the Bitter Root chain of the Rocky mountains in October, 1853, where they were quite abundant on the branches of Clark's river. Near Fort Steilacoom they are scarce in summer, the greater number, probably, retiring to the recesses of the Cascade mountains or further north to breed.—S.

MERGUS SERRATOR, Linn.

Red-breasted Merganser.

Mergus serrator, Linn. Syst. Nat. I, 1766, 208.—Gm. I, 546.—Wilson, Am. Orn. VIII, 1814, 81; pl. lxix.—Sw. F. Bor. Am. II, 1831, 462.—Nuttall, Man. II, 1834, 463.—Aud. Orn. Biog. V, 1839, 92; pl. 401.—Ib. Syn. 298.—Ib. Birds Am. VI, 1843, 395; pl. 412.—Baird, Gen. Rep. Birds, 814.

Merganser serrator, Steph. Shaw's Gen. Zool. XII, 1824, 165.—Bon. List, 1838.

Sp. Ch.—Feathers of the forehead extending on the bill in a short obtuse angle, and falling far short of the end of those on the sides; the outline of the latter sloping rapidly forward, and reaching half way from the posterior end of the lower edge of bill to the nostrils, and far beyond those on the side of lower jaw. Nostrils narrow, posterior; their posterior outline opposite the end of basal third of commissure.

Male.—Head with conspicuous pointed occipital crest. Head and upper part of neck, all around, dark green; under parts reddish white. Jugulum reddish brown, streaked with black. Sides conspicuously barred transversely with fine lines of black. Feathers anterior to wing, white, margined with black. White of wing crossed by two bars of black.

Female.—Head with compressed occipital crest; chestnut brown. Body above ash; beneath reddish white. The black at base of secondaries exposed; outer tertials white, edged with black.

Length, 23.25; wing, 8.60; tarsus, 1.80; commissure, 2.76.

Hab. Whole of North America and Europe.

I obtained one specimen of this merganser at Fort Steilacoom, where it is not uncommon. In habits it closely resembles the preceding species.—S.

The red-breasted sheldrake is common from September to April, but I have not obtained them during summer, though it is not unlikely that they breed in some parts of the territory. The shyness of these birds in summer makes it difficult to distinguish this from the last species as they fly.—C.

LOPHODYTES CUCULLATUS, (Linn.) Reich.

Hooded Merganser.

Mergus cucullatus, Linn. Syst. Nat. I, 1766, 207.—Gmelin, I, 544.—Wilson, Am. Orn. VIII, 79; pl. lxix.—Bon. Obs. No. 251.—Sw. F. Bor. Am. II, 1831, 463.—Nuttal, Man. II, 465.—Aud. Orn. Biog. III, 1835, 246: V, 619; pl. 233.—Ib. Syn. 299.—Ib. Birds Amer. VI, 1843, 402; pl. 413.

Lophodytes cucullatus, Reich. Systema Avium, 1852, p. ix.—Bonap. Comptes Rendus, XLIII, 1856.—Baird, Gen. Rep. Birds, 816.

Sp. Ch.—Head with an elongated, compressed, semicircular crest. Anterior extremity of nostrils reaching not quite as far as the middle of commissure. Frontal feathers extending nearly as far as half the distance from lateral feathers to nostril; the latter much beyond the feathers on side of lower mandible. Bill shorter than head.

Male.—Bill black. Head, neck, and back black; under parts and centre of crest white. Sides chestnut brown, barred with black. White anterior to the wing, crossed by two black crescents. Lesser coverts gray; white speculum with a basal and median black bar; black tertials streaked centrally with white.

Female with a shorter and more pointed crest. The head and neck reddish brown; the back without pure black; the sides without transverse bars; the white of wings less extended.

Length, 17.50; wing, 7.90; tarsus, 1.20; commissure, 1.98

Hab.—Whole of North America.

The beautiful hooded merganser is extremely common in winter on the fresh water lakes near Fort Steilacoom, where I obtained several fine specimens of both sexes. They also breed sparingly in the neighborhood.

In the summer of 1856 I shot one out of a brood of half grown young, which were being reared on a small sluggish stream near the garrison garden. Being but slightly wounded it showed great dexterity in swimming, diving, and hiding, and other spirited endeavors to escape. The rest of the brood, being unharmed, took to the shore and managed most successfully to hide in the long grass near the water. The individual shot was about two-thirds grown, and seemed to be in color an exact miniature of the adult female.—S.

The hooded merganser is often shot in winter, but I never saw it during summer in the Territory.—C.

Family PELECANIDAE. The Pelicans.

PELECANUS ERYTHRORHYNCHUS, Gmelin.

Rough-billed or White Pelican.

Pelecanus erythrorhynchus, Gm. Syst. Nat. 1788, 571.

Pelecanus trachyrhynchus, Lath. Ind. Orn. II, 1790, 884.—Bon. Comp. List, 1838, 60.—Gray, Gen. of Birds, 1845, 309.

Cyrtopelicanus trachyrhynchus, Bon. Cons. Av. II, 1855, 163.

Pelecanus onocrotalus, Bon. Syn. 1828, No. 351.—Rich. and Sw. F. Bor. Am. II, 1831, 472.—Nutt. Man. II, 1834, 471.

Pelecanus americanus, Aud. Orn. Biog. IV, 1838, 88.—Ib. Syn. 1839.—Ib. Birds Am. VII, 1844, 20; pl. ccccxxii.

Sp. Ch.—Head with a yellow occipital crest; bill yellow, sub-maxillary pouch very large; general color white; primaries black, second the longest; legs and feet very strong.

Adult male.—The general plumage is pure white; in the breeding season, with a roseate tinge; the crest and elongated feathers on the breast pale yellow; the alula, primary coverts and primaries black, the shafts of the latter white for the greater part of their length, being brownish black at the end; the outer secondaries black, the inner more or less white, the shafts of all white underneath. Bill yellow, with the edges and unguis reddish; upper mandible high at the base, but becoming gradually flattened to the end; on the ridge just beyond the middle of the bill is a thin elevated bony process about one inch high, and extending towards the end for three or four inches; lower mandible broad at the base, with the cruta separated nearly to the point; underneath the lower mandible, beginning at the junction of the cruta, and extending down the neck for about eight inches,

is a large membranous sac or pouch, capable of great expansion; it is of the same color as the bill; bare space around the eye bright yellow; iris white; legs and feet yellow; claws yellowish brown.

The female differs in not having the bony projection on the upper mandible.

Total length, 70 inches; wing, 24. 50; bill, 13. 50; tarsi, 4. 75; tail, 7.

Hab.—Throughout the United States, rare on the coasts of the middle and northern States. Fur countries up to the 61st parallel.

The rough-billed pelican is common at San Francisca, where I obtained a very fine specimen in January, 1856. This species may extend as far north as the Columbia, but I have myself not seen it beyond the locality first mentioned.—S.

This bird I have seen along the Platte river, Nebraska, in October, on its way south, and from its far northern range in the interior, and from its being abundant in Utah, I have no doubt of its occurring in some seasons in the interior of Washington Territory, though not seen there by me, nor did I see it at Shoalwater bay, or elsewhere on the coast north of San Francisco.—C.

PELECANUS FUSCUS, Linnaeus.

Gray or Brown Pelican.

Pelecanus fuscus, Linn. Syst. Nat. 1766, 215.—Bon. Syn. 1828, No. 352—Nutt. Man. II, 1834, 476.—Aud. Orn. Biog. III, 1835, 376; V, 1839, 212.—Ib. Syn. 1839.—Ib. Birds Am. VII, 1844, 32; pl. ccccxxiii and ccccxxiv.—Baird & Lawrence, Gen. Rep. Birds, p. 870.

Onocrotalus fuscus, Bon. Cons. Av. II, 1855, 163.

Sp. Ch.—Head with a short occipital crest of light reddish brown; bill grayish white, more or less dusky, and marked with pale carmine spots; a large pouch appended to the under mandible; below the color is very dark ash, above hoary; second primary longest; legs stout.

Adult male.—Head white, except on the fore part, where it is yellow; sides of the neck adjoining the pouch white; hind part of neck and lower part in front dark chestnut brown, the short crest pale reddish brown; back and wings grayish ash, with dusky margins, the former color prevailing on the larger wing coverts and scapulars; primaries brownish black, secondaries dark ashy brown, with their outer margins grayish white; shafts of the primaries white until near the end, when they become black; tail grayish ash, with the shafts of the feathers white for one-half their length; terminal half black; under plumage dark brownish ash, with the sides of the body from the neck for its entire length, marked with narrow longitudinal white lines; on the lower part of the neck is a small patch of pale yellow; bill grayish white, tinged with brown and intermixed with spots of pale carmine; the lower mandible blackish at the end, and having underneath a large pouch similar in character to that of the preceding species, but of a greenish black color, with the ridges formed by the wrinkles paler; bare skin surrounding the eye deep blue; iris white, the eyelids pink; legs and feet black.

The plumage of the fully adult female is similar in color to that of the male; the feathers of the head are rather rigid, not downy as in the male.

In the young the plumage generally is of a dusky brown.

Length of male, 56 inches; wing, 22; bill, 13. 50; tarsi, 3; tail, 6. 50. Young, length 48 inches; extent, 57. 50.

Hab.—From Texas to North Carolina; California coast.

About September 1 the gray or "brown" pelican enters Shoalwater bay in large flocks, which remain until November. They feed principally during rising tide, wandering in long trains over the channels, and diving occasionally one after the other, sometimes scattering and fishing singly. They rest, during the intervals, on a large sand island in the mouth of the bay. I have never seen them in their spring migrations northward.—C.

Family PHALACROCORACIDAE.—The Cormorants.

Graculus, Bonap.

GRACULUS DILOPHUS, (Sw.) Gray.

Double-crested Cormorant.

Pelecanus (Carbo) dilophus, Sw. Faun. Bor. Am. II, 1831, 473.

Phalacrocorax dilophus, Nutt. Man. II, 1831, 483.—Aud. Orn. Biog. III, 1835, 420: V. 1839, 628.—Ib. Syn. 1839, 302.—Ib. Birds Am. VI, 1844, 423; pl. ccccxvi.

Graculus dilophus, Gray, Gen. of Birds, 1845.—Bon. Cons. Av. II, 1855, 172.—Baird & Lawrence, Gen. Rep. Birds, 877.

Carvo dilophus, Gamb. Jour. Acad. Nat. Sc. Phil. 2d Ser. I. 1849, 247.

Sp. Ch.—Greenish black; behind each eye a recurved crest of loose feathers; gular sac orange; second quill longest; tail of twelve feathers.

Adult.—The plumage of the head, neck, lower part of the back and entire under surface is greenish black, the feathers of the upper part of the back, the wing-coverts, the scapularies and tertiaries, grayish brown or dark ash, the margins of which are greenish black; primaries blackish brown, lighter on the inner webs; the secondaries dark grayish brown; tail black, as are also the shafts; running from the bill over the eye is a line of white filamentous feathers, there are also a few of the same character sparsely distributed over the neck; behind each eye is a tuft of rather long slender feathers, erect and curving forwards; bare space in the region of the eye, and gular sac orange; upper mandible blackish brown, with the edges yellowish; lower yellow, marked irregular with dusky; iris bright green; legs, feet, and claws black, claw of the middle toe pectinated.

Length, 34 inches; extent, 51.50; wing, 13; tail, 6.75; bill, 2.85; tarsus, 3.50; outer toe and claw, 4; inner, 2.50; hind, 1.75.

Hab.—Atlantic coast from Labrador to Carolina; fur countries; Pacific coast from Washington Territory to California.

The double-crested cormorant is very common during spring and fall, in the larger rivers of the Territory, west of the Cascade mountains, where they generally sit on some snag or stump in the water watching for fish, or sunning themselves like vultures after eating, with their wings half-spread. They are very watchful, and rarely let a boat approach within gunshot, though they often stupidly fly close to it, after starting off. In winter they abound in the open bays and mouths of rivers, but in summer appear to retire to more northern regions. I have never heard them make any sound. When wounded they swim and dive so rapidly that it is useless to pursue them. They roost on cliffs and trees at night.—C.

Rather common on Puget Sound, where I obtained a specimen in February, 1856. Individuals of this species are fond of alighting on drift logs, and thus float about with the tides and currents, apparently greatly enjoying their mode of travel.

Immense numbers of cormorants are found in flocks on the rocky islands near Bellingham bay.—S.

GRACULUS VIOLACEUS, (Gmelin,) Gray.

Violet-Green Cormorant.

Pelecanus violaceus, Gm. Syst. Nat. I, 1789, 575.

Graculus violaceus, Gray, Gen. of Birds, 1845.—Baird & Lawrence, Gen. Rep. Birds, p. 881.

Phalacrocorax resplendens, Aud. Orn. Biog. V, 1839, 148.—Ib. Syn. 1839, 304.—Ib. Birds Am. VI, 1843, 430; pl. ccccxix.

Urile bicristatus, Bon. Cons. Av. II, 1855, 175.

Sp. Ch.—Violet-green; narrow white feathers are sparingly distributed on the sides of the neck and hind part, and sides of the body; gular sac orange.

Adult.—Crown and sides of the head dark bluish green, gradually blending with the beautiful violet blue of the hind head and entire neck; back, rump, wings, and other plumage of a rich deep green; axillars, sides under the wings, and thighs

violet blue; smaller wing coverts violet; primaries brownish black, as are the other quills on their inner webs; tail and shafts black; the entire plumage very lustrous and silky in appearance; dispersed over the neck and on the sides of the body near the thighs are numerous short white piliform feathers which expand at the end in the form of a small brush; gular sac and bare space about the eye orange; feathers of the throat extend upon the lower part of the gular sac for about half its length, and terminate in a point; upper mandible blackish brown, lower dusky yellow; legs and feet black; iris greenish brown. *Female* brown.

Length, 28 inches; alar extent, 41; wing, 10.50; tail, 6 25; bill, 2; tarsus, 1.90; outer toe and claw, 3.75.

Hab.—Western coast of North America, California, Washington Territory.

The only specimen of this brilliant cormorant I obtained at the same place where Townsend got his in 1834, the extreme point of Cape Disappointment. While in that vicinity, in July, 1853, I watched for them particularly for several days, and though there were plenty of *P. Townsendi* in the river, I never saw one of these within the cape. But, sitting on the summit of that beautiful promontory one day, admiring a view unsurpassed by any in the world, I observed, three hundred feet below, in a little cove, sheltered from the breakers by some rocks, a bird fishing, which I knew must be the long-sought cormorant. I at once descended, and, obtaining a skiff with its side stove in, I went with the obliging light-house keeper and his assistant, who rowed round to the outside of this remarkable cape. The distance was only about 300 yards, and, until we suddenly turned the sharp outer point, the water was smooth as a mill-pond. Scarcely had we turned this point, when, suddenly, a flock of perhaps two hundred flew from the rocky ledges, and, circling round our boat, retired to a distant part of the cliffs. The swell was so violent here that it was impossible to take any aim, and after some useless shots, I returned. Next day we went round again, and by getting out on a ledge, before they all flew, I succeeded in shooting one. I found it to be a young bird, of course, incomplete in plumage at this season, and did not attempt to get any more. Townsend's specimen nearly cost him his own life and that of six men, so violently does the sea dash, usually, against these rocks. At the time of my visit it was unusually smooth. Afterwards, sailing out of the river, I observed numbers of them fishing some distance out. Many had the flanks marked by a large patch of white, probably distinguishing the adult birds. Others appeared different, and may have been the *P. perspicillatus*, a species common on the coast of California and also of Russian America. At the cape there was no sign of their having had nests nor places suitable for them. They prefer rocky islands, separated from the shore, which several kinds of water birds frequent, in incredible numbers, near the Straits of De Fuca and along the coast of California. As no such occur anywhere near the mouth of the Columbia, I had no opportunity of visiting these interesting nurseries. They probably only visit Cape Disappointment during their migrations.—C.

NOTE.—*A curious bird.*—Colonel Fitzhugh and Mr. Reed, of Bellingham bay, Washington Territory, informed me that during the winter of 1854–'55 a very strange "duck" was obtained by them on the bay near the coal mines.

According to the remembrances of the above named gentlemen it was of about the size of a small goose, or between that of a brant and a mallard. Its general color was of a *rich cream;* tail *dark*. The bill and feet, to the best of their recollections, resembled those of a *duck*. The forehead had a *red streak* on each side, and from the back of the head there were long *elongated, greenish-black feathers*, falling down gracefully to the right and left.

The bird was very tame, and allowed itself to be stoned for some time. It then rose and flew a short distance, when, again alighting on the *water*, it was approached and killed with a gun.

Never having seen such a bird before, and all the Indians who saw it having declared positively that it was new to them, the above named gentlemen had the bird skinned. The specimen, however, was unfortunately afterwards destroyed.

The fact that the bird *sat on the water*, and upon becoming alarmed retreated to it again at but a short distance, forbids the idea that it was a "*crane*;" besides, the fact that the long feet and legs of one of the *ardeinæ* would have at once been recognized. Perhaps the bird was an *albino* cormorant, yèt its want of shyness or fear would seem to indicate the contrary.—S.

Family PROCELLARIDAE. The Petrels.

Sub-Family DIOMEDEINAE.—The Albatrosses.

DIOMEDEA BRACHYURA, Temminck.

The Short-Tailed Albatross.

Diomedea brachyura, Temm. Pl. col. v, about 1828.—Cassin, Ill. I, 1855, 289, pl. 1. Adult.—Baird and Lawrence, Gen. Rep. Birds, 822.

Diomedea nigripes, Aud. Orn. Biog. V, 1839, 327.—Ib. Birds Am. VII, 1842, 198.—Cass. Ill. I, 1854, 210; pl. xxxv. (Young.)

Sp. Ch.—*Adult.*—Head and neck white, tinged with pale yellow; primaries, tips of secondaries and tertiaries, upper edge of the wing, and greater wing coverts brownish black; tail white, tipped with dark brown; back and entire under plumage pure white; bill pale reddish yellow; legs flesh color.

Length, 33 inches; alar extent, 84; wing, 20; tail, 5½; bill, 5; tarsus, 3½.

The young are ashy brown, lighter on the abdomen; for some distance around the base of the bill, and a space below the eye, grayish white; bill dusky; tarsi and feet black. Length, 30.50 inches; extent, 85 inches. Iris brown; bill black, with a purple tint; feet black.

Hab.—North Pacific; coasts of California and Oregon.

A dusky colored albatross, which proved to be the *Diomedea brachyura*, was obtained by me in the spring of 1856 from Captain Diggs, of the brig Cyrus, who had taken it off the coast of Oregon a few days before.

During a winter passage of fourteen days from the Straits of Juan de Fuca to San Francisco, although I saw many birds of the *genus*, I saw but one individual in *light* colored plumage, and that was near the mouth of the Columbia. All the birds I noticed seemed to belong to the species which Cassin has figured as the *D. nigripes* of Audubon. In a late number of Mr. Cassin's work he takes the ground that the *D. nigripes* is merely the *D. brachyura* in immature plumage. If this be the case I cannot understand why the *young* birds preponderate so greatly, as in my voyage from the Straits of Fuca I saw the single bird in light colored plumage spoken of above, and a little later, in my voyage from San Francisco to Hong Kong, China, I saw but one more in white plumage, as far west as the 145th degree of *east* longitude, and north of latitude 12° north, although in both passages *dark colored* birds were common. One of these, caught about four hundred miles southwest of San Francisco, had the white spot at the base of the bill very apparent, and many other birds of the species seen flying in our wake were similarly marked.

I fully concur in the remarks of Mr. Peale, quoted by Cassin, that the species *D. chlororhynchus* and *D. fusca (D. fuliginosa, Gmelin)* are confined to the south of the equator, and think, therefore, that they should both be stricken from the northwest fauna. It is true that specimens of both species brought home by Dr. Townsend are said to have been obtained from

off the coast of Oregon, but it is well known that Dr. Townsend's specimens were very carelessly labelled, and I think it very likely that in these instances the specimens were obtained during his voyage to South America.

The specimen of albatross that I obtained four hundred miles southwest of San Francisco was caught in the usual way, by a hook baited with pork. In taking albatrosses in this manner the hook is not swallowed, but catches on the under side of the upper mandible, just behind its decurved point. The bird we caught became very "sea-sick" as soon as it was hauled on board, and very soon emptied the contents of its stomach upon the deck. Some of this ejected food looked much like broken up pieces of the cuttle fish, (squid.)

Albatrosses are generally seen more abundant in the wake of a vessel when the wind *is ahead.* This may be caused by the slow rate that at such times the vessel is progressing; but I think that the most likely explanation is that the wings are so shaped and placed that they act more like sails than wings, and are calculated to sail very "close to the wind." Added to the port and starboard tacks that the bird can make, as well as the ship it is in company with, it has the power to tack obliquely upwards and downwards in the air, which allows *a double zigzag progression.* The explanation why a bird can *fly* against the wind is not at all needed, but why it can *soar* against the wind, with apparently no exertion, and without (except at very long intervals) even attempting to gain speed by *flapping its wings*, (flying,) first puzzles the observer, and seems contrary to all our preconceived notions of movement, gravity, and force. When these birds are *going with the wind* they much more frequently flap their wings and fly like other feathered creatures.—S.

The short-tailed albatross is abundant along the coast of the Pacific, where, however, I have seen only the dark plumaged young, in various stages, but always marked chiefly with black. They often follow vessels, and are sure to appear soon after the dinner time of the steamships, to pick up the scraps thrown overboard.

Their flight is very rapid and graceful, performed apparently without effort, while their very narrow, long wings give them a peculiar appearance. They often alight and rest on the water, but can easily overtake the steamer going at twelve miles an hour, and sweep around it, beating in its wake in search of food.—C.

Family LARIDAE. The Gulls.

LARUS GLAUCESCENS, Lichtenstein.

The Glaucous-winged Gull.

"*Laroides glaucescens*, Licht." Bruch, Rev. Lar. in Cab. Jour. 1855, 281.
Larus glaucescens, (Licht.) Baird & Lawrence, Gen. Rep. Birds, p. 842.

Sp. Ch.—*Adult.*—Head and neck white, streaked with gray; under surface, rump, and tail pure white; back and wings light pearl blue, (same shade as in *L. argentatus;* (the primaries are of the same color, but rather darker, with well defined white tips; on the first quill the white extends on the tip for about two inches, and is crossed by a bar of the same color as the primaries; iris white; bill yellow, with an orange red spot on the angle of the lower mandible; legs and feet flesh color.

Length, 23 to 26 inches; extent, 51.50 to 58; wing, $16\frac{1}{2}$; tail, $7\frac{1}{4}$; bill along ridge, $2\frac{3}{8}$, deep at base, 11-16, at angle, 12-16; tarsi, $2\frac{9}{16}$; middle toe and claw, $2\frac{5}{8}$. Female smallest.

Young mottled with graysh white and cinereous; the quills and tail bluish ash; bill black, in some specimens yellowish at base; legs and feet dusky flesh color; much smaller in first year than adult.

Hab.—Northwest coast of North America.

The glaucous-winged gull is extremely common on Puget Sound during the winter season,

but probably retires to the north, for breeding purposes, in the spring, as after the middle of April they become quite scarce in that vicinity. During the cold months they are found in large flocks along the shores of the sound, and on the flats and marshes at the mouths of the small rivers and creeks in the neighborhood. At high water they are apt to extend their excursions a short distance above the mouths of these streams, flying singly or in small companies of three or four. They are at that season quite tame and unwary, flying very close to man, and allowing themselves to be readily killed with fowling pieces. When an individual is killed or wounded, the others, attracted by the sight, hover about their companion, and become an easy prey to the gunner. In this habit they resemble many other species of gull.

Most of the specimens I obtained were either in immature plumage, or else in peculiar winter dress. I have noticed from a short distance, among large flocks, certain individuals which varied greatly in the degrees of lightness of coloration, some being quite white-looking, while others had a very dark, dingy, smoked appearance.

They apparently subsist principally on such refuse matters as are washed up along the shores at high water. They are fond of resting on logs, boards, and bits of wood, which are at all times found drifting about on the waters of the sound. Floating on these they remain almost asleep for hours, until the tide having retreated, they leave their frail barks and congregate in vast numbers on their favorite feeding grounds.—S.

This gull, of which I obtained several specimens in various stages of plumage at Shoalwater bay, differs in no respect from the following in habits, as far as I observed, and constantly associates with it, at least in the colder weather. It seems to be a larger bird in each period of its growth.

NOTE.—*Larus chalcopterus* (LICHT.) LAWRENCE, Gen. Rep. Birds, p. 843. During the coldest winter weather of January, 1855, a gull appeared at Shoalwater bay larger than the preceding, and with its mantle very pale gray, wings unmarked with black, bill and feet whitish. It remained only a short time, and was very shy. It fed along the shore, like the other species. It agreed with the *L. chalcopterus* of Mr. Lawrence better than any other.—C.

LARUS OCCIDENTALIS, Audubon.

The Western Gull.

Larus occidentalis, AUD. Orn. Biog. V, 1839, 320.—AUD. Birds Am. VII, 1844, 161.—LAWRENCE & BAIRD, Gen. Rep. Birds, 845.

Laroides occidentalis, BRUCH, Cab. Jour. 1855, 282.—BON. Cons. Av. II, 1856, 219.

SP. CH.—*Adult*—The head, neck, rump, tail, and under plumage, pure white; the back and wings grayish blue, many shades darker than in *L. argentatus;* the first six primaries are black towards their ends, extending on the first for about half its length, and lessening on the others, until on the sixth it is reduced to a narrow sub-terminal bar; the tips of all are white; on the first the white is an inch and a half in extent, and crossed near the end with black; secondaries and tertiaries with broad white tips; iris gray; bill deep yellow, with a bright orange red spot on the angle of the lower mandible; legs and feet flesh color.

Young mottled with lead colored brown, grayish white, and brownish ash, lighter on the lower parts; primaries blackish brown; bill brownish black, dull yellow at base; legs and feet brownish flesh color; eye dark brown.

Length, 21.50 to 24 inches; extent, 52 to 55; wing, 15.25 to 17; tail, 7; bill, $2\frac{1}{2}$; depth at angle, $\frac{7}{8}$; tarsus, $2\frac{7}{8}$. Female smallest.

Hab.—Northwest coast of North America.

The *western gull* is very abundant along the whole of the coast that it inhabits, as far south as the Peninsula of California, where I noticed them for the last time on my voyage down the

coast in December, 1855. On the numerous small islands near the Mexican boundary they were very abundant, and, as many winter even at Puget Sound, it is probable that their winter migration extends no further south than here. And it is very likely that they reside about these islands during summer, as they are known to breed on the islands off San Francisco bay, which can differ very little in climate from these, the prevailing sea breeze causing a very uniform temperature along the whole western coast of the United States.

At Shoalwater bay I had an opportunity of observing the habits of this bird at all seasons, though there were unfortunately none of its breeding places to which I had access. It is the only species constantly to be seen there, and is abundant, though not occurring in such great flocks as some other species do at certain seasons. In flight, appearance, and cries they very closely resemble the silvery gull. Their flight is slow, laborious, and performed by flapping, except in storms and violent blows, when they are fond of soaring to a great height, circling round each other like eagles, without a movement of their wings, and often wandering far inland—the sure forerunner of a severe storm.

They feed commonly during low tide, both at night and day. No sooner does it begin to ebb than hundreds of gulls, which have been dozing for hours on the beach, or, if the day is calm, floating quietly on the water at a little distance, join the long train of screaming godwits, sand-pipers, and fish-crows, and fly to the sand-banks, river shores, and muscle-beds, there to feast until the returning tide drives them away. If one discovers a dead fish or other dainty food, his loud screams, audible for miles, soon summon a crowd of associates, like the vultures, to the carcass. Then all is confusion; one flying off with the fish, others pursuing, screaming. and striking each other, until they have each had a pull at it, and none is left. The same thing occurs if one finds a clam, (of which many species are washed out and left on the surface by the tide.) As they cannot break the shells with their bill, the successful bird will fly towards some well known hard sank-bank, and rising by circling flight fifty feet or more, drops the shell. If not broken by the first fall he repeats it, ascending higher each time, or flying off to a harder place. As it falls they dive through the air after it, in short oblique turns, quite different from their bold headlong plunge after fish in the water. Crabs, sea-worms, dead rats, and probably any animal food, is eaten by the voracious gull, which may be compared among sea-birds to the raven on land, which feeds also in the same places.

If the tide has been a very low one, (as happens every alternate fortnight along the western coast,) the gulls gorge themselves with food before the return of flood tide, and then sit listlessly until it floats them off, probably often sound asleep. But they are very difficult to approach within shot even then, though they will frequently fly very near a person who is not pursuing them, screaming, and observing him with much curiosity. If not satisfied, they watch along the edge of the water for the shoals of small sculpins, sticklebacks, &c., that come over the shoals with the tide, and, wading in, feed on them as they approach; or, if shoals of herring are entering the bay, they sometimes fly over and dive after them. This, however, is too laborious a mode for this lazy bird when it can get enough by easier means. About San Francisco they have taken advantage of man's presence, and great numbers of these and ring-billed gulls feed on the refuse of the markets and sewers, fearlessly resting on the wharves, where they are not molested.

Though so unscrupulous in feeding, this gull is exceedingly neat, and spends hours in cleaning and pluming its beautiful feathers, generally sitting in the water and washing itself at the same time. No sea bird is more beautiful or graceful in its motions than this, as seen in large flocks

pursuing the steamers along the coast, within sight of land, easily keeping up with the speed of ten miles an hour, though having nothing like the power of wing of the albatross that generally accompanies them at these times.

In March these gulls are commonly seen in pairs, the female only distinguishable by its somewhat less size. They are said to lay on the islands off Cape Classet, and perhaps do also on some within the Straits of De Fuca. They are still found during summer a long distance from these places, but whether these are barren birds, or resort for food to such a distance, I do not know.

In October, 1853, I saw a few large gulls 400 miles up the Columbia river, east of the Cascade mountains, but could not ascertain whether they were of this species. I believe, however, that they fly up that river at least 100 miles from its mouth.

I could distinguish no difference in habits between the dark and light blue specimens, which have the same peculiar bill and dimensions.—C.

LARUS CALIFORNICUS, Lawrence.

The California Gull.

Larus californicus, Lawr. Ann. Lyc. N. H. N. Y. VI, 1854, 79.—Baird & Lawrence, Gen. Rep. Birds, 846.
Laroides californicus, Bon. Cons. Av. II, 1856, 220.

Sp. Ch.—*Adult:* The head, neck, under plumage, rump, and tail, pure white; back and wings pearl blue, darker than in *L. argentatus*, but not so dark as in *L. occidentalis;* the six outer primaries are marked with black towards their ends, extending on the first for about two-thirds its length, and becoming less on the others, until on the sixth it consists only of a subterminal bar; the tips of all are white; on the exterior quill the white extends about two inches, and is crossed near the end by a black bar; the secondaries and tertiaries terminate with white; iris hazel; bill yellow; basal part of the upper mandible greenish gray for two-thirds its length; a blackish band crosses both mandibles near their ends; it is darker in color on the ower mandible, where it is bordered with orange; tarsus and feet flesh color.

Length, 20 to 22.50 inches; extent, 49 to 55; wing, 15.25 to 16; tail, 7; bill, 2; depth at angle, 10.16; tarsus, $2\frac{3}{8}$; middle toe and nail, $2\frac{1}{4}$; female smallest.

Hab.—Pacific coast.

The California gull is also an abundant species along the western coast, excepting in summer, when they appear to retire beyond the limits of the Territory. In winter they remain in small numbers on the coast, and probably for some distance up the Columbia as long as it remains unfrozen. In habits they much resemble the western gulls, but seem more inclined to dive for fish, though they also feed in the edge of the water during rising tide. I have never seen them break shell-fish as the other does. I did not see any of them following the vessels out at sea, and they appear to be confined to bays and rivers.

The following are the colors of parts which change in drying: Iris dark brown, bronzed; bill greenish yellow, with a black band around angle, and *sometimes* an orange red patch beneath; inside of mouth orange red; edge of lids dark dull red; feet greenish white, in the young grayish.—C.

LARUS DELAWARENSIS, Ord.

The Ring-billed Gull.

Larus delawarensis, Ord, Guth. Geog. 2d Am. ed. II, 1815, 319.—Baird & Lawrence, Gen. Rep. Birds, 846.
Larus brachyrhynchus, Rich. & Sw. F. Bor. Am. II, 1831, 422, (not of Gould.)
Larus zonorhynchus, Rich. & Sw. F. B. Am. II, 1831, 422.—Nutt. Man. II, 1834, 300.—Aud. Birds Am. VII, 1844, 152; pl. ccccxlvi.—Bon. Cons. Av. II, 1856, 224.

Sp. Ch.—*Adult:* The head, neck, under parts and tail are pure white; back and wings very light pearl blue; first and second primaries black for two-thirds of their length towards the end, the three next quills have the black much less in

extent, and on the sixth it is reduced to a sub-terminal bar; the first quill is black at the end, above which is a broad white band; the second quill is black to the tip, with a white spot on the inner web an inch and a half from the end; the other primaries tipped with white; secondaries and tertiaries ending in white; iris yellow; bill crossed near the end with a blackish brown band, between which and the base it is greenish yellow; the tip is yellow; tarsi and feet greenish yellow.

Length, about 20 inches; wing, 15; tail, 6; bill, $1\frac{5}{8}$; depth at angle, $\frac{1}{2}$; tarsus, $2\frac{1}{8}$.

Young: On the upper plumage mottled with blackish brown and gray; beneath grayish white, with light brown spots; primaries black; tail white, with a sub-terminal black band; bill black, with the base yellow.

Hab.—Arctic America; Texas to Labrador; western rivers; northwest coast.

The ring-billed gull is not uncommon on Puget Sound, where I obtained several specimens. It has been my rule, as far as possible, in this report, to confine myself, in treating of the various species of birds, to those which have been *collected* by me; and, after careful comparison with others in the Smithsonian collection, have been found strictly entitled (so far as yet known) to the specific name assigned to them. In the present instance, however, I feel justified in departing from the rule, as, although my own specimens were lost before reaching Washington, I, nevertheless, feel sufficiently certain that they were identical with the old *Larus zonorhynchus*, the present species. This is verified by the presence of a specimen in the Smithsonian collection procured by Dr. Kennerly on Puget Sound, and also by a comparison of the notes taken by me on a couple of skins which agree, with the exception of the toothed bill, with the following description by Mr. Ord of the species which is quoted by Mr. Lawrence in the General Report: "Length, $19\frac{1}{2}$ inches; extent, 46; upper mandible with four indentations or blunt teeth; lower with three; corner of mouth and eyelids, bright vermilion; head, neck, tail, and beneath, pure white; wings, back, and scapulars, blue ash; weight, 19 ounces."

My own specimen, (marked 478,) an adult, measured almost the same as the one described by Mr. Ord, being 19 inches in length and 46.50 in extent. The legs and feet were of a gamboge yellow, with a slight greenish tinge; bill of the same color, with a black zone near the tip; *margin of eyelids vermilion; angle of mouth bright reddish orange.* Another agreed in every respect except in dimensions, which were larger.

This species seems to be subject to great changes in color of plumage, feet, and bill, at different ages. Its habits are not different on Puget Sound from those of its brethren on the eastern coast, and have been so well described by Nuttall and others that I can add scarcely anything. Near Fort Steilacoom they are very abundant during the cooler months, at which season they are very common on the marshes and flats at the mouths of the different rivers emptying into the sound. When an individual is wounded, his comrades, like other gulls, hover over and circle around the victim as if impelled by motives of curiosity or compassion. Frequently at this time the others can be readily brought down by the same gunner with his undischarged barrels, but the occasion must be quickly seized because the sympathizing birds, which at first are bewitched, as it were, by the accident to their companion, soon lose the charm, and, becoming more wary, enlarge their circles, and, ascending higher and higher, soon place themselves out of shot range.—S.

LARUS SUCKLEYI, Lawrence.

Suckley's Gull.

Larus suckleyi, Lawr. Ann. Lyc. N. H. N. Y. VI, 1858, 264.—Baird & Lawrence, Gen. Rep. Birds, 847.

Sp. Ch.—*Adult:* Head, neck, under plumage and tail, pure white; back and wings clear pearl blue; ends of the primaries black, occupying about half the length of the first and decreasing to the seventh, on which it consists only of a sub-terminal

spot; the first primary has a white spot over both webs an inch and a half in extent inside the tip; the second has a similar mark of white, but less in extent; the tips of the first and second primaries are black, but of all the others white; the secondaries and tertiaries largely marked with white at their ends; bill dusky yellowish green, except on the ridge of the upper mandible, forward of the nostrils, and on the angle of the lower mandible, which parts are orange yellow; tips of both mandibles pale yellow; legs and feet greenish yellow.

Length, 16 to 17.50 inches; extent, 41.50 to 44.50; wing, 12 75 to 14; tail, 5½; bill, 1 5-16; tarsi, 1⅝.

Young: Mottled with grayish white and dark ash; wings and tail dark brown, the latter ashy white at the base and tip; bill flesh color for half its length from the base, terminating with black; legs and feet flesh color; iris brown.

Hab —Pacific coast; Puget Sound.

The gull to which Mr. Lawrence has, in a complimentary manner, applied my name is quite abundant during the winter season in the bays and inlets of Puget Sound. In habits it much resembles the *L. glaucescens* and, in certain conditions of plumage, (in its general appearance,) it looks very much like a miniature of that species. They are also found much in company with each other. I saw a gull, apparently of this species, attempting to break a clam by carrying it high in the air and then dropping it, in the same manner as is the practice of fish crows and several of the other gulls.

The greater number retire to the north on the approach of warm weather, but again return to the sound about the 1st of November. They are fond of swimming about on the surface of the water, and, when desirous of so doing, can swim very fast. They generally merely rest dozingly, or lazily paddle about during their period of quiet; as the tide retreats, however, they join vast numbers of other gulls, fish crows, &c., and repair to the flats at the mouths of the various rivers which empty into the sound, where they engage themselwes in search for small fish, crabs, mollusks, &c., and for any refuse offal which may be thrown up by the waves. Their voice is a rather harsh, grating scream of not much power.—S.

In spring and fall, for a few days of May and October, a small species of gull passed through Shoalwater bay in flocks, and early in the morning would seek some quiet, sheltered cove to feed, diving for fish rapidly while fluttering over the shoals, and rarely alighting on the water except to rest. They kept up a continual chattering while thus engaged, and on the approach of a boat would move off together for another place. Their flight was more rapid and easy than that of the large kinds. The adult was white, with a pale gray mantle. I only obtained one young specimen.—C.

BLASIPUS HEERMANNI, (Cassin,) Bon.

The White-headed Gull.

Larus heermanni, Cass. Proc. Acad. N. Sc. Phil. VI, 1852, 187.—Ib. Ill. I, 1853, 28; pl. v.

Larus Belcheri, Vigors, Zool. Journ, IV, 1829, 358.—Ib. Zool. Blossom, 1834, 39.

Blasipus heermanni, Bon. Cons. Av. II, 1856, 211.—Baird & Lawrence, Gen. Rep. Birds, 848.

? Larus fulginosus, Gould, Zool. Beagle, Birds, p. 141.

Sp. Ch.—*Adult:* Bill red, both mandibles tipped with black; feet and legs dark; head white, which color gradually blends into an ashy lead color, enveloping the entire body above and below, darker on the back and wings and paler on the abdomen. Secondary quills tipped with white, forming an oblique bar when the wings are folded. Superior coverts of the tail very pale cinereous, nearly white. Quills and tail feathers brownish black, all of the latter narrowly tipped with white. Shafts of the two first primaries white on the inferior surface of the wing.

Length, 18.50 to 21 inches; wing, 13.25 to 14; tail, 5½; bill from angle to tip of upper mandible, 2½ inches.

Young: Smaller; entire plumage lead color; darker on the head and paler on the under surface of the body; quills and tail feathers brownish black, the latter narrowly tipped with white; rump white. Iris brownish gray.

Hab.—Coast of California.

Two gulls, supposed by me to be specimens of *L. belcheri, Vigors*, but retained under the synonym of *heermanni*, by Mr. Lawrence, in the General Report, were obtained in the Straits of Fuca, near Whidby's island, Washington Territory, in August, 1856. At that season they are quite common about the lower part of Puget Sound, but they retire southward before cold weather.

This species, unlike the ring-billed and many other gulls, does not seem to be fond of feeding on the shores and bare flats, but is almost always (in that vicinity at least) found on the *kelp beds* floating in the deep water some distance from shore. Whether they are attracted to these kelp beds by the hopes of finding small shell-fish in the upturned and net-like roots of such plants as, detached from their fastenings on the bottom, have become entangled together and with others *in situ*, or because these *floating islands* afford a convenient resting place where they can rest to a great extent secure from their enemies of the land, I cannot say; but presume that the presence of a supply of food must be a great inducement. It was from one of these collections of kelp that I shot my two specimens. While being skinned they emitted a very rank disagreeable odor, much stronger and more unpleasant than that of the ring-billed species. Both my gulls had bright red bills.—S.

Early in September large flocks of this gull begin to enter Shoalwater bay with the terns and pelicans. They remain about two months before retiring southward fishing for the herrings which come at that season. Though quite rapid in flight, and well able to supply themselves with food, they have a curious habit of "sponging" on the pelicans and large gulls. Often a long train of pelicans is seen, as the tide is rising, slowly wandering round the bay, each one attended by one or two of these gulls, which are usually some distance behind.

Whenever a pelican awkwardly plunges into the water and emerges with its enormous scoop-net full of fish, its parasites are sure to be ready and fearlessly seize the fish from its very jaws, the stupid bird never resenting the insult, or appearing to take the least notice of the little pilferer, which it could easily rid itself of by one blow, or even swallow them alive. The large gulls being poorer fishers, and perhaps less easily robbed, are not so often honored by the company of this uninvited guest, while the terns are entirely too quick to be made useful by it. When no pelicans are present these gulls will fish for themselves, and often accompany the western gull along the edge of the rising tide, wading in after small fish.

In July, 1855, I observed for several days, from the top of Cape Disappointment, flocks of gulls flying northward, together with pelicans, at a short distance from the beach. A few entered the mouth of the Columbia one day, and I obtained one. It seemed to be of this species, having the red bills and same proportions, but was smaller, and with a white head, tail, and rump, blotched with gray, resembling Heermann's gull in colors, though larger. None of these were seen in the flocks in September. I agree with Mr. Lawrence and Dr. Suckley in considering this the *L. belcheri* of Vigors, and our specimens agree with his measurements, excepting the wing. Mr. Cassin's measurements may have been from shrunken skins, though only an inch less in length than the specimen last mentioned.—C.

CHROICOCEPHALUS PHILADELPHIA, (Ord,) Lawrence.

Bonaparte's Gull.

Sterna philadelphia, Ord, Guthrie's Geog. 2d Am. ed II, 1815, 319.

Larus capistratus, Bonap. Syn. 1828, No. 293.

Larus bonapartei, Rich & Sw. F. B. A. II, 1831, 425; pl lxxii.—Nutt. Man. II, 1834, 294.—Aud. Birds Am. VII, 1844, 131; pl. ccccxlii.

Chroicocephalus philadelphia, Baird & Lawrence, Gen. Rep. Birds, 855.

The White-headed Gull

Larus Heermanni *(Cassin)*

Lith Printed & Col^d by J.T.Bowen Philad

Reproduced with permission from Cassin's Illustrations.

Sp. Ch.—*Adult:* Head and upper part of neck grayish black, this color extending rather lower on the throat than on the neck behind; lower part of neck, under plumage, rump, and tail, white; back and wings clear bluish gray; first primary black on the outer web; inner web of the first primary, both webs of the second, and the outer web of the third, white; the inner web of the third and all the other primaries are of the same color as the back; the six outer primaries have their ends black for the extent of about an inch on the central ones, but less on the first and sixth, they are all slightly tipped with white; shoulders, anterior borders of the wings, and outer webs of the primary coverts, white; bill deep black; inside of mouth carmine; iris hazel; legs and feet orange, with a reddish tinge.

Length, 14½ inches; wing, 10½; tail, 4¼; bill, 1⅛; tarsus, 1 $\frac{5}{16}$.

Hab.—Texas to Nova Scotia, Mississippi river, fur countries, Pacific coast of North America.

The beautiful little Bonaparte's gull is extremely common on Puget Sound, near Fort Steilacoom, and seems to be a constant resident at all seasons. It, like several other species, is found, at low tide, abundant on the flats and "tide prairies" at the river mouths.

It is the only gull commonly eaten by the Nisqually Indians. I tried one broiled, finding it equal to many birds well recognized as edible, as, for example, the larger rails.

I obtained birds in July, which I supposed were the young of the year. The species is sufficiently numerous during the summer to warrant the belief that it breeds in the vicinity. The country, at the time I spent my last summer there, was in such a disturbed condition, owing to the hostile attitude of the Indians, that my excursions and observations were much interfered with.—S.

Note.—The hooded gull, or *C. cucullatus* of Lichtenstein, was obtained by me at Panama, and probably extends to a considerable distance north, along the coast. It is a little smaller than the *C. philadelphia* and has the bill *deep carmine*, besides other differences.—S.

In May and in October a *black-headed* species of gull migrates along the western coast in large flocks. They closely resemble the *Larus Suckleyi* in habits, feeding entirely by diving among the shoals of small fish. Being constantly on the wing, and very shy, I could not distinguish which of the five black-headed species described they were, but probably the *C. philadelphia*.—C.

RISSA SEPTENTRIONALIS, Lawrence.

The North Pacific Kittiwake; Turner's Kittiwake.

Rissa septentrionalis, Lawr. Ann. Lyc. N. Hist. N. Y. VI, 1858, 265.—Baird & Lawrence, Gen. Rep Birds, 854.

Sp. Ch.—*Adult:* Head, neck, under surface, and tail, pure white. Back and wings light pearl blue; first primary black for about half its length from the end; a white spot one and a half inches in length crosses both webs near the end, which is black; second primary black for about one-third its length; also with a white spot (but smaller) inside the black tip; the next five primaries are black at their ends, with white tips; the black decreases inwards, existing as a spot only on the seventh; basal part of the primaries bluish ash, becoming white where it joins the black ends, except on the first and second; secondaries and tertiaries ending with white; bill dusky green at the base for two-thirds its length; remainder yellow, which deepens to orange on the ridge of the upper mandible and angle of the lower; legs and feet yellowish green. Length, 17¼ inches; wing, 13½; tail, 5¾; bill, 1⅝; tarsus, 1⅞.

Hab.—Pacific coast of North America; Puget Sound.

The two specimens upon which Mr. Lawrence founded this species were given to me by Dr. Thomas J. Turner, of the United States navy, who had obtained them at Bellingham bay, a harbor just north of Puget Sound. Dr. Turner obliged me on many occasions by his kindness in securing me specimens of various kinds, and made his friendship the more pleasant by the interest which he took in furthering, as far as was in his power, the procurement of data tending to elucidate the hitherto obscure natural history of the northwest coast.—S.

? Sterna regia, Gambel ; Lawrence, Gen. Rep. Birds, p. 859.

I several times, in May and September, saw a few terns flying over Shoalwater bay, which were probably of this species, though others might have sometimes been with them, for description of which I must refer to the general report.—C.

Family COLYMBIDAE. The Divers.

Sub-Family COLYMBINAE. The Loons.

COLYMBUS TORQUATUS, Brünnich.

The Great Northern Diver; The Loon.

Colymbus torquatus, Brunn. Orn. Bor. 1764, 134.—Baird & Lawrence, Gen. Rep. Birds, p. 888.

Colymbus glacialis, Linn. Syst. Nat. I, 1766, 221.—Forster, Phil. Trans. LXII, 1772, 383.—Wils. Am. Orn. IX, 84, 1824, pl. lxxiv.—Bonap. Syn. 1828, No 368.—Rich & Sw. F. B. Am II, 1831, 474.—Nutt. Man. II, 1834, 513.—Aud. Orn. Biog IV, 1838, 43; pl. 306.—Ib. Birds, Am. VII, 1844, 282; pl. ccccIxxvi

Colymbus immer, Linn Syst. Nat. I, 1766, 222. (Young of year.)

Sp. Ch.—Bill compressed, strong and tapering, outline of upper mandible nearly straight, very slightly curved; the lower mandible has a groove underneath, running from the junction of the crura towards the point; the tail consists of twenty feathers.

Adult.—The head and neck are dark bluish green, the upper part and sides of the head glossed with purple; there is a small transverse mark on the throat, composed of white feathers of a quill-like form, distinct from each other and placed longitudinally on each side of the neck; lower down are larger patches of white, of the same peculiar form, and running in the same direction; these almost meet behind, and in front are about one inch apart, the effect of these pure white feathers, relieved by the dark color of the neck, is very beautiful; the upper plumage and wing coverts are deep glossy black, beautifully marked with pure white spots placed in regular transverse rows, slightly curving downwards; these spots, on the upper part of the back, are small and nearly round, but as they descend lower on the back increase in size and become quadrangular in form, being largest on the scapularies; on the lower part of the back, upper tail coverts and sides (which are black) the spots are small and round; the sides of the neck, near the shoulder, are beautifully lineated with black and white; the primaries, secondaries and tail brownish black; the under surface glossy white, with a narrow band of dusky feathers crossing the lower part of the abdomen, and marked with small white spots; lower tail coverts blackish brown, tipped with white; bill black; iris deep bright red; tarsi and feet grayish blue externally, tinged on the inside with pale yellowish red; webs brownish black; claws black.

Length, 31 inches; wing, 14; tarsus, $3\frac{1}{4}$; bill, 3; height at base, 1.

Young.—The plumage above is grayish black, the feathers of the back margined with grayish white, the under plumage pure white, bill yellowish, with the ridge of the upper mandible dusky.

Hab.—Very generally distributed; it is abundant on the Atlantic coast, in the lakes of the interior and the fur countries, Pacific coast, and New Mexico

This loon I found in winter common near Fort Steilacoom, both on the salt waters of the sound and upon the small fresh water lakes of the vicinity. On the latter a few remain during the breeding season. They are possessed of all the cunning and quickness which so characterizes the species elsewhere. In winter they are quite fat and are much sought after by the Indians, who are very fond of eating them, and who shoot them in the following manner: A single Indian, in a small ducking canoe, sits screened by a bunch of evergreen branches placed in the bow. Seeing a loon swimming in the water he paddles stealthily towards it, and having approached, say, within very long gunshot, waits until the bird dives. He then paddles with all his might in the direction in which the bird went under; but as soon as the latter reappears on the surface, which, if previously undisturbed, it is apt to do at a *short* distance, the wily hunter stops paddling, and if within easy range fires at the unsuspicious bird, which is generally killed, or, at least, severely wounded at the first fire. Should the bird, however, be still out

of range he waits until it again dives, when he proceeds as before, each dive bringing him nearer and nearer the victim.

I have been told by western men that loons, when wounded, frequently dive to the bottom, where, seizing hold of *eel grass*, or some other aquatic plant, they remain submerged until it is presumed that all danger is over, or until actual necessity drives them to the surface for air. Some, it is said, becoming entangled among the weeds, are drowned.

The distance that this bird will pass under water, when endeavoring to escape by diving, is wonderful. I think that I have certainly seen them, after diving, reappear at a distance of nearly half a mile. They use their wings while under water, *flying*, in reality, through the aqueous element.—S.

The great loons are abundant during winter in the bays along the coast, and in summer disperse in pairs to the small lakes of the interior, especially near Puget Sound, to breed.—C.

COLYMBUS PACIFICUS, Lawrence.

The Pacific Diver.

Colymbus pacificus, Lawrence; Baird & Lawrence, Gen. Rep. Birds, p. 889.

Sp. Ch.—*Young:* Head above and hind part of neck dark bluish gray; back, wing coverts, and scapulars blackish brown, margined with grayish white, most conspicuous on the latter; primaries black; secondaries dark brown, with the ends of their inner webs margined with white; under lining of wings and axillars white; tail blackish brown, tipped with white; under plumage white; sides dark brown, the feathers with gray edgings; a dusky band on the lower part of the abdomen, at the base of the tail; lower tail coverts white, with brownish ends; the upper mandible is dark brown above, sides yellowish at the base for half its length, bluish white at the end; under mandible, with the basal half, yellow, the remaining half bluish white; tarsi and feet are externally reddish brown, (in the dried specimens,) yellowish internally; claws yellow, with dusky margins.

Length of one specimen, (No. 9924,) from Fort Steilacoom, 25 inches; wing, $11\frac{1}{4}$; tail, 2; bill, $2\frac{1}{8}$; tarsus, $2\frac{3}{4}$.

No. 9921 measures in length, 24 inches; wing, $10\frac{1}{4}$; tail, 2; bill, 2; tarsus, $2\frac{1}{2}$; outer toe, $3\frac{1}{2}$.

Hab.—Coast of California; Puget Sound.

The Pacific diver is found rather abundantly on Puget Sound in winter. In habits it resembles greatly the preceding species, for immature individuals of which I mistook it. It usually retires to the north on the approach of warm weather. A few may remain on the inland lakes of the Territory.—S.

COLYMBUS SEPTENTRIONALIS, Linn.

The Red-throated Diver.

Colymbus septentrionalis, Linn, S. N I, 1766, 220.—Bonap. Syn. 1828, 370.—Rich. and Sw F. B. A. II, 1831, 476.—Nutt. Man. II, 1834, 519.—Aud. Orn. Biog. III, 1838, 20: V, 1839, 625.—Ib. Birds Am. VII, 1844, 299; pl. cccclxxviii.—Baird & Lawrence, Gen. Rep. Birds, p. 890.

Sp. Ch.—*Adult:* Front, sides of the head, upper part of the throat, and sides of the neck, clear bluish gray; upper part of the head of the same color intermixed with blackish spots; the hind neck streaked longitudinally with white on a greenish black ground, the white feathers being raised above the others. On the fore part of the neck is a large longitudinal patch of deep reddish brown. Upper plumage brownish black, slightly tinged with green, and on the upper part of the back and lower part and sides of the neck streaked and mottled with white. Wings and tail brownish black; under plumage pure white, with a band across the hind part of the abdomen, and the lower tail coverts brownish gray; bill bluish black; iris bright red; tarsi and feet brownish black externally, on the inside pale flesh color; claws yellowish at the base, dusky at the end.

Length, 27 inches; wing, $11\frac{1}{2}$; tail, $2\frac{1}{2}$; bill, $2\frac{1}{4}$; tarsus, $2\frac{3}{4}$.

Young: Upper part of the head and hind neck dull gray, streaked with grayish white; back and wings blackish gray, profusely marked with oval-shaped white spots, there being two on each feather, smallest on the upper part of the back and

largest on the tertiaries; quill feathers and tail blackish brown, the latter edged with white; sides of the neck white, speckled minutely with gray; under plumage silky white, crossed on the lower part of the abdomen by a dusky band; bill bluish gray, dusky on the ridge and flesh colored at the base. Length, 20 inches; extent, 30; iris blood red.

Hab —During the winter as far south as Maryland; inhabits as far north as the Arctic seas; found also on the Pacific coast.

On the 20th of March, 1855, I obtained at Fort Dalles, Oregon, an immature bird, which seemed to be of this species. Another was procured by Mr. Gibbs at Port Townsend, Puget Sound.

From the joint observations of Dr. Cooper and myself, it seems probable that the different species of loons, as well as the grebes, are several years in acquiring their perfect adult plumage.

Another individual which I obtained at New Dungeness, Straits of Fuca, I had an excellent opportunity of examining at a time it was attempting to escape from a shallow lagoon to the open water of the straits by swimming through the narrow outlet. Although slightly wounded, it moved so rapidly that I was obliged to run as fast as I could to keep up with it. At the same time, as the water was clear and shallow, I was able to watch its motions distinctly. It had the head and neck extended nearly perfectly straight, the bill acting as a "cut-water," and, in addition to the ordinary propulsion by the feet, used the wings exactly as if flying. Indeed, the bird was flying through water instead of air. This habit is probably common to all the *Colymbidae*.—S.

Sub-Family PODICIPINAE.—The Grebes.

PODICEPS CRISTATUS, (Linn.) Lath.

Crested Grebe.

Colymbus cristatus, Linn. Syst. Nat. I, 1766, 222.

Podiceps cristatus, Lath. Ind. Orn. 1790.—Rich. & Sw. F. B. A. II, 1831, 410.—Nutt. Man. II, 1834, 250.—Aud. Orn. Biog. III, 1835, 595; pl. 292.—Ib. Birds Am. VII, 1844, 308; pl. cccclxxix.—Baird & Lawrence, Gen. Rep. Birds, p. 893, *var.? cooperi*, 894.

Sp. Ch —*Adult:* Front, upper part of the head, and long occipital tufts dark umber brown, the base of the tufts brownish red; the ruff is bright brownish red on the upper portion immediately under the tufts and anteriorly, on the hind part brownish black; upper plumage dark umber brown; humeral feathers white; primaries umber brown; secondaries mostly white; throat and sides of the head white; fore part and sides of the neck adjoining the ruff brownish red; under plumage silvery white; sides dusky, tinged with reddish brown; bill blackish brown, tinged with carmine; bare loral space dusky green; iris bright carmine; tarsi and feet greenish black externally, greenish yellow internally; webs grayish blue.

Length, 19 to 20.50 inches; extent, 33 to 34; wing, $7\frac{3}{4}$; bill, $2\frac{1}{16}$; tarsus, $2\frac{1}{2}$. Female smallest.

Young: Upper part of head dark brown; hind neck brownish gray; back and wings brownish black; humeral feathers white; primaries dark umber brown on the outer webs, paler on the inner; lower parts silvery white, sides brown; upper mandible brownish black, pale at the end and yellow on the sides at the base; lower mandible yellow, with the sides dusky; feet black, greenish yellow on inner side; iris brown.

Hab.—Atlantic States from Nova Scotia southward; Texas in winter; fur countries, Pacific side of the continent; Washington Territory.

In the notes on *P. occidentalis* I have noticed all I remarked of this species. On the only occasion when I saw them they were with the others, which they so closely resembled in appearance that at a distance they were scarcely distinguishable. I could see also no difference in their cries or habits at that season, and never saw them at any other time or place. Although killed late in March, both species were in the immature plumage, as were the many specimens of the three species I obtained in the Territory at almost all seasons, except summer, when they all disappear.—C.

Bowen & Co. Lith. & Col. Philada

PODICEPS OCCIDENTALIS.

PODICEPS OCCIDENTALIS, Lawrence.

The Western Grebe.

Podiceps occidentalis, (Lawrence,) Baird & Lawrence, Gen. Rep. Birds, p. 894.

Sp. Ch.—*Winter:* Upper part of the head and nape fuliginous black; back and wing coverts grayish black, the feathers margined with gray; primaries light ashy brown, darker at the end and white at base; secondaries white, marked with ash on the outer webs; in some specimens the middle secondaries are pure white; space between the bill and the eye gray; throat, sides of the neck, and entire under plumage silvery white; sides marked with grayish black; bill dusky, appearing nearly black in the dried specimens, except on the cutting edges and at the end, where it is yellow; iris, orange red; tarsi and feet, blackish olive externally, and internally greenish yellow. Length, 24 to 28 inches; extent, 34.50 to 36; wing, from 7.50 to 8.50; bill, 3; tarsus, 3. Female smallest. A large individual in Dr. Suckley's collection had the tarsus 3.50 inches; bill from gape, 3.75.

Hab.—Pacific coast, from Washington Territory to California.

This grebe I observed during winter on Shoalwater bay, and in March at Puget Sound, but have never seen one at any time between May and November, when they return southward. While at anchor in the sound, one afternoon about sunset, large numbers of this and the preceding species came near the boat, and I succeeded in killing four, three of which I obtained. At a little distance the two species are difficult to distinguish, and also very hard to shoot, unless fired at when they are looking another way. They were most active and numerous towards sunset, when their loud bleating resounded everywhere around us. The *P. californicus* was abundant on the sound at the same time. Both species are frequently washed up dead after storms. They all fly strongly and rapidly, though rising from the water with difficulty. The much longer neck of this species will alone distinguish it from *P. cristatus*, which it so much resembles in coloring and size. After skinning them I measured their necks, including all the cervical vertebrae, and found the neck of this species to be $12\frac{1}{2}$ inches long, four inches more than that of the other. It is scarcely long and slender enough, as represented in the figure.—C.

The western grebe is a regular visitor at Puget Sound during the cold months, and is usually quite a common winter resident on its bays and inlets. In the fall of 1856 I obtained numerous specimens in the vicinity of Fort Steilacoom, finding them most abundant at the mouths of the small rivers and creeks emptying into the sound. These latter they ascend at flood-tide, swimming up to the fresh water, where they remain diving and fishing until the tide having changed and the water falling, they retreat gradually back to the deeper waters of the sound. They are generally found in couples, even late in the fall. At that season they are without the elongated feathers of the head, characteristic of other species during the spring and early summer. It is called by the Nisqually Indians *swah-teese*, and is said by them to have formerly been an Indian man—the elder brother of the *Podiceps cornutus*, a very disreputable character, and the wife of the great blue heron.

A specimen killed near Fort Steilacoom, October 8, 1856, measured as follows: length, 24 inches; extent, 33; wing, 7.87; from angle of eye to tip of bill, 2.90; tarsi, externally dusky olive, internally pale dusky greenish yellow; iris, orange; bill, dusky above; pale on the sides and tip.—S.

PODICEPS CORNUTUS, (Gm.) Lath.

The Horned Grebe.

Colymbus cornutus, Gm. Syst. Nat. I, 1788, 591.

Podiceps cornutus, Lath. Ind. Orn. II, 1790, 783.—Bon. Syn. 1828, No. 366.—Rich. & Sw. F. B. A. II, 1831, 411.—Nutt. Man. II, 1834, 254.—Aud. Orn. Biog. III, 1835, 429: V, 1839, 623.—Ib. Birds Am. VII, 1844, 316; pl. cccclxxxi.—Baird & Lawrence, Gen. Rep. Birds, p. 895.

Sp. Ch.—*Adult:* Upper part of the head, cheeks, throat, and ruff, glossy black; a broad band running from the bill over the eyes, and the elongated occipital tufts behind them yellowish red, deepest in color adjoining the bill; upper surface brownish black, the feathers margined with gray; primaries brownish ash, secondaries mostly white, some of the outer ones dark ash; the fore neck and upper part of the breast bright chestnut red, sides of the same color, intermixed with dusky; abdomen silky white; bill bluish black, yellow at the tip; loral space bright carmine; iris carmine, with an inner circle of white; tarsi and feet dusky gray externally, dull yellow internally, and on both edges of the tarsus.

Length, about 14 inches; extent, 24; wing, $5\frac{3}{4}$; bill, 1; tarsi, $1\frac{3}{4}$.

Young: The whole upper plumage grayish black, darkest on the head, feathers of the back with gray margins; throat, sides of the head, a broad space on the sides of the neck, nearly meeting behind, breast and abdomen, silvery white; sides and lower part of abdomen dusky.

Hab.—Generally distributed, specimens being in the collection from the Atlantic States, the interior ones, and the Pacific coast.

The horned grebe is abundant between the parallels of 45° and 49° north latitude, from the Mississippi river to the Pacific. I obtained specimens at St. Paul, Minnesota, also in western Minnesota, near Nebraska, and from the salt waters of Puget Sound. Many birds of this species breed on the saline lakes so abundant in the western portion of Minnesota. It is a winter resident of Puget Sound, where it is known as the *Ho-hwhy* by the Nisqually Indians.

Like other species of the genus this grebe has the power of remaining for a considerable time under water. It dives very quickly, and is very difficult to capture when wounded. I have not noticed it float about entirely submerged, excepting the bill and head, as others do when anxious to avoid detection, but suppose that this instinct is as common to it as the other habits, which are so similar between the different species.—S.

The horned grebe appears along the coast in September and October in large numbers. It has the usual habits of the grebes, living on fish, for which it dives, and depending less on its wings than its feet for escape, though able to fly well when compelled to. One which I opened had its stomach full of a marine grass. In April they retire beyond the Territory. Their only cry is faint and bleating.—C.

PODICEPS CALIFORNICUS, Heermann.

The California Grebe.

Podiceps californicus, Heerm. Proc. Acad. N. Sc. Phil. VII, 1854, 179.—Baird & Lawrence, Gen. Rep. Birds, 896.

Sp. Ch.—*Winter Plumage:* The entire upper plumage is blackish brown, nearly black on the head; primaries brownish ash, some of the inner ones tipped with white; secondaries white, with their basal portions dark ash; under parts silky white, the neck in front light ash, and the sides and lower part of abdomen brownish ash; under linings of the wings white; bill dark brown, the base of the lower mandible yellowish, and its tip light horn color; iris yellowish gray; tarsi and feet externally dark green, on the inside yellow.

Length, 12 inches; wing, 5; bill, $\frac{7}{8}$; tarsus, $1\frac{1}{2}$.

Hab.—California, headwaters of Missouri and Columbia rivers.

I obtained a specimen of the California grebe in the St. Mary's valley, (W. T.,) lying between the Rocky and Bitter Root mountains. The bird was badly injured in the head by a rifle ball, so as to puzzle me very much while attempting to compare it with the recorded descriptions of the different species to which I had access. In habits this grebe appears nearly related to the *P. cornutus*.—S.

Bowen & Cº Lith. & Col. Philada.

PODICEPS CALIFORNICUS

PODILYMBUS PODICEPS, (Linn.) Lawr.

The Pied-Bill Grebe.

Colimbus podiceps, Linn. S. N. 1766, 223.

Podiceps carolinensis, Lath. Ind. Orn. II, 1790, 785.—Bonap. Syn. 1828, No. 367.—Rich. & Sw. F. B. A. II, 1831, 412.—Nutt. Man. II, 1834, 259.—Aud. Orn. Biog. III, 1835, 359: V, 1839, 624.—Ib. Birds Am. VII, 1844, 324; pl. cccclxxxiii.

Podilymbus lineatus, Heermann, Proc. Acad. N. S. Phil. VII, 1854, 179.

Podilymbus Podiceps, Baird & Lawrence, Gen. Rep. Birds, p. 898.

"Sp. Ch.—*Adult:* Upper plumage very dark brown; primaries dark ash; secondaries ash on the outer webs and white on the inner; bill pale blue, dusky on the ridge of the upper mandible, both mandibles crossed with a broad black band, including the nostrils; chin and throat marked with a conspicuous black patch nearly two inches in extent; cheeks and sides of the neck brownish gray; lower part of the neck, upper part of the breast, and the sides, dull rusty brown, spotted and rather indistinctly barred with brownish black; lower part of breast and abdomen grayish white, mottled with dusky spots; iris, brown; tarsi and feet, grayish black.

"Length, 14 inches; wing, $5\frac{1}{4}$; bill, $\frac{7}{8}$; tarsus $1\frac{1}{2}$.

"*Young:* The throat is white and the bill without the transverse black band, the under plumage more silvery white; in other respects the same as the adult. Some specimens, probably the birds of the year, have whitish lines on the sides of the head. I compared a specimen in this plumage with Dr. Heermann's type of *P. lineatus*, and found them precisely alike."—*Lawrence.*

Hab.—Atlantic States generally. Texas and New Mexico. California and Oregon.

Several specimens of the pied-bill grebe were obtained by me at Fort Steilacoom.

In winter it frequents the salt waters of the sound, but in summer breeds abundantly on the small fresh water lakes of the vicinity.—S.

While at the Straits of De Fuca, in March, 1855, I frequently heard in the marshes along shore a loud noise much like the squeaking of young pigs, and, though often very near me, I could never see what produced it. Soon after I noticed the dabchicks in the ponds, and heard them utter their loud, sonorous call, more like the braying of a jackass than anything else I can compare it to. Though the sounds before heard were different, I have little doubt that this little bird was the performer, probably entirely sunk under water except its bill.

In the small and beautiful lakes near Puget Sound they were abundant, commonly a pair in each; and on the 11th June I had the pleasure of finding a nest containing four eggs, just ready to hatch. It was, unlike that seen by Audubon, built *upon the water*, where it floated securely, kept in place by the stalks of spirea which grew thickly around it. Being constructed entirely of stalks of grass, it was soaked through with water, but, as the pond was stagnant, the water was warm enough not to prevent the hatching of the eggs. Its shape was conical, a foot wide at the base and about nine inches at the top, where it was slightly hollowed out. Since its construction it must have subsided with the water two feet, though there was still three feet depth of water under it. The eggs were as large as a pullet's, white, with a pale brown crust, and nearly equal in size at each end.

As the lakes often are frozen for a very short time only, and the rivers not at all in mild winters, this grebe may sometimes remain throughout the year.—C.

Family ALCIDAE.—The Auks and Puffins.

MORMON CIRRHATA, (Pallas,) Bon.

The Tufted Puffin.

Alca cirrhata, Pallas, Spicilegia Zoologica, pt. V, p. 7, (1769,) Gm. Syst. I, 1788, 553.

Mormon cirrhatus, Bon. Syn. 1828, 429.—Aud. Orn. Biog. III, 599; pl. 293.—Ib. Syn. 343.

Mormon cirrhata, (Pallas,) Baird & Cassin, Gen. Rep. Birds, p. 902.

Figures.—Buff. Pl. Enl. 761.—Aud. B. of Am. pl. 249: oct. ed. VII, pl. 462.

Sp. Ch.—The largest species of this genus, general form short and stout, head large, bill much flattened laterally, entirely horny, upper mandible composed of three parts or lamina, the first of which, next to the frontal feathers, is narrow and covered with minute spots, the second smooth, with the apertures of the nostrils inserted at its lower edges, and with an elevated sub-cylindrical process on its upper edge or the culmen of the bill; third with two or three transverse curved grooves, and somewhat hooked at the tip; under mandible smooth. Head with two crests of elongated pendant feathers from behind the eyes; wings rather short, tail short, legs and feet strong, claws sharp.

Two first parts of the bill yellowish green, terminal part and under mandible reddish yellow or orange, the under mandible greenish at base. Crests pale yellow; plumage around the base of the bill, including the eyes, white. All other parts of the plumage brownish black, darker on the head and back; legs bright orange red.

Total length, about 15 inches; wing, 8; tail, 3 inches.

Hab.—Western coast of America; California; accidental on the coast of Maine, (Mr. Audubon.)

I obtained a specimen of mormon from the vicinity of the Straits of Fuca, which was kindly presented to me through George Gibbs, esq., by Captain Fowler, of the schooner R. B. Potter. The range of the species probably extends as far south as the Farralone islands, off San Francisco bay, as certain specimens there obtained were seen by me in collections in San Francisco.—S.

CERORHINA MONOCERATA, (Pallas,) Cassin.

The Horned-billed Guillemot.

Alca monocerata, Pallas, Zoog. Rosso-Asiat. II, 1811, 362.

Cerorhyncha occidentalis, Bonap. Ann. Lyc. N. Y. II, 1828, 428.

Ceratorhyncha occidentalis, Bonap. Comp. List, 1838, 66.—Aud. Orn. Biog. V, 1839, 104; pl. 402.

"*Cerorhina orientalis*, Bonap." Brandt, Bull. Acad. St. Petersburg, I, 1837, 345.

Cerorhina monocerata, (Cassin,) Baird & Cassin, Gen. Rep. Birds, 905.

Sp. Ch.—Bill rather large, flattened laterally; upper mandible with an upright horny appendage at its base, the top or termination of which is frequently broken or worn off; angle of under mandible very distinct, and having the appearance of being a distinct piece; wings moderate, pointed; tail short, rounded; legs short, robust. Head and entire upper parts dark fuliginous; lighter and tinged with ashy on the throat and neck in front; darker and nearly black on the back and rump. A line of long yellowish white feathers over and behind the eye and another from the corner of the mouth. Under parts of body white; under wing coverts and sides ashy brown; bill dark orange; legs light colored.

Total length, about 15 to 15½ inches; wing, 7¼; tail, 2¼; bill to gape, 2 inches.

Hab.—Northwestern and western coasts of America; northeastern Asia; Japan, (Com. Perry's Expedition.)

This curious bird, first described by Bonaparte from specimens said to have been brought from the west coast of America, is found moderately abundant on the lower part of Puget Sound and in the Straits of Fuca. In the summer of 1854 I obtained a couple of young birds from the vicinity of Port Townsend, Washington Territory. Unfortunately they were destroyed by rats. Protection island, near the last mentioned locality, is said to be a favorite breeding ground of the species, where, according to the accounts given me by Indians, they breed in holes dug in the steep banks, like those of the black guillemot, and are said to have much the same habits. The most remarkable feature of the bird is the characteristic singular wax-yellow protuberance on the bill.

Dr. Ayres, of San Francisco, had in his cabinet a specimen of this species obtained by him from the Farralone islands.—S.

CERORHINA SUCKLEYI, Cassin.

Cerorhina suckleyi, (Cassin,) Baird & Cassin, Gen. Rep. Birds, p. 906.

Sp. Ch.—Smaller than the preceding, and with the bill much more narrow laterally; plumage darker. Bill shorter than the head; upper mandible curved towards the end, without distinct basal knobs; under mandible with the angle very distinct; bill rather widened at the base, compressed towards the end; wings short; tail very short. Entire upper parts brownish black, darker and nearly clear black on the head and back. Throat, neck, and upper part of breast dark cinereous;

lower part of breast and abdomen white; sides and under wing coverts cinereous; bill light at base, dark at the end; feet dark yellow.

Total length, about 12½ inches; extent, 24 inches; wing, 6½ inches; tail, 1¾ inch; iris pale hazel.

Hab.—Steilacoom, Puget sound.

A single specimen of the *cerorhina suckleyi* was obtained by me at Steilacoom, Puget Sound, January 28, 1856. A description of the bird in detail was noted at the time, and is as follows: Membrane at base of upper mandible grayish dusky black; the *knob* slightly more grayish and *more soft than* the knob of the *cerorhincha occidentalis;* middle of both mandibles dingy orange, their tips dusky; iris pale hazel; under surface of the webs of the feet, and the posterior aspect of the tarsi dusky black; upper surface of the toes bluish white, darker about the articulations; nails black; no hind toe.

Upper surface of body from forehead to tip of tail, including back of neck, scapulars, and wings, brownish black, almost *jet* black posteriorly; concealed inner webs of primary and secondary quills dusky; lores, chin, cheeks, and anterior surface of throat and neck dusky brown, paler beneath on the fore part of the breast; under surface of the wings and sides of the same color; belly and breast white, many of the feathers faintly tipped with pale dusky; neck *very full;* no white is seen on the upper surface.

Although the Indians informed me that the species is not uncommon in the waters of the sound, I never obtained another specimen, and doubt whether I ever saw any others among the many divers, guillemots, &c., which are so common there in the winter season.

The individual obtained dived with great facility when wounded, and seemed as much at home *under* water as a podiceps or loon. It was killed in deep water, about half a mile from the shore. The skin when examined by Mr. Cassin had no knob on the bill. This being fleshy, had probably shrunk so as not to be apparent.—S.

URIA COLUMBA, (Pallas,) Cassin.

The Western Guillemot.

Cepphus columba, Pallas, Zoog. Rosso-Asiat. II, p. 348, (1811.)

Uria mandtii, Licht. Verz. p. 88, (1823)?

"*Uria mandtii*, Licht. Mus. Dresd."—Reich. Vollst. Naturg. Schwimmv. pl. 4, fig. 47.

Uria columba, Baird & Cassin, Gen. Rep. Birds, p. 912.

Figures.—Voy. Vincennes and Peacock, Birds, pl. 38, fig. 1.

Sp. Ch.—Rather larger than the preceding; bill larger and stronger. White space on the wing, divided by a band of brownish black running diagonally from the edge of the wing; under wing coverts dark ashy, frequently tipped with white; axillary feathers ashy brown. All other parts of the plumage brownish black, with a greenish lustre, and frequently tinged with ashy on the back. Bill black; feet red. *Younger and winter plumage:* Upper parts brownish black; under parts white, generally more or less spotted with dark brown; white space on the wing, as in summer, but frequently lest distinct. The lining membrane of the mouth of adult birds is of a fiery red; tarsi and feet of a deep red, with a tinge of lake; bill black; iris brown; claws black. A male, killed in August, 1856, measured 14½ inches in length; extent, 24¾; wing 7.

Hab.—Western and northwestern coast of America. Kamtschatka, (North Pacific Surveying and Exploring Expedition, Captain Rodgers, United States navy.)

The western guillemot is found abundantly throughout Puget Sound, being generally present at all seasons in greater or less numbers, but *least* abundant in winter. It breeds in steep, bold banks overhanging the salt water—burrowing out holes which extend two or three feet back from the entrance, and, according to the statements of the Indians, laying several *white* eggs. By reason of some prejudice the natives will not eat this bird; why, I cannot say, as they are fond of fishy-tasting birds, and prefer eating surf-ducks, of strong rank flavor, to

mallards. The present bird dives with quickness and facility, and in this manner, like many others of its class, it endeavors to escape when wounded. There are several bare rocks projecting out of the water off the mouth of Hood's Canal, which, during the summer and early fall, are much resorted to by these birds, who at this season appear to be gregarious. They sit on the rocks during the middle of the day—many of them almost motionless—apparently resting after the fatigue of the morning's feed. At the approach of a gunner they show a little apprehension, but, as a general rule, do not fly until at least one discharge is fired. They then make for some other point, or alight in the water at a distance. Individuals or small companies of two or three desultorily return in a short time, and can generally be readily killed. If wounded, and the bird falls in the water, it usually displays as great dexterity in diving and other manœuvres to escape death or captivity as any one of the group.

During the spring months and the breeding season they are partially gregarious, being frequently found in small companies of four or five individuals.—S.

The black guillemot is a common resident in Puget Sound and the waters northward. It burrows holes several feet deep in the sandy cliffs, at heights of from 20 to 200 feet above the water, the entrance being within two feet of the top of the ground, and the burrow winding horizontally inwards. I was not there when they had eggs or young, but from their frequently flying in and out in March I suppose that they were preparing to lay. The young are fledged in August, and are then caught by the Indians by digging down to the nest. This bird has got the name of "bank duck" from the settlers there.—C.

BRACHYRAMPHUS MARMORATUS, (Gmelin,) "Brandt."

Colymbus marmoratus, Gmelin, Syst. Nat. I, 1788, 583.
Uria townsendii, Aud. Orn. Biog. V, 1839, 251, pl. 430.—Townsend, Narrative, 1839, 352.
Brachyramphus marmoratus, Baird & Cassin, Gen. Rep. Birds, 915.

Figures.—Lath. Gen. Syn. VI, pl. 96.—Pennant, Arc. Zool. II, pl. 22.—Aud. B. of Am. pl. 430; oct. ed. VII, pl. 475.

Sp. Ch.—Small; bill slender, distinctly notched near the end; frontal feathers advancing upon it to near half its length. Wings short; tail very short; legs and feet short and weak. Entire upper parts brownish black, tinged with ashy on the back. Scapular feathers white, forming two conspicuous spots on each side of the back; ring around the back of the neck white. Under parts white; under wing coverts dark ashy brown; longitudinal stripes on the side ashy brown; bill black; feet yellow.

Younger: Upper parts brownish black, with the feathers tipped and edged with dull reddish; under parts spotted and marbled with brownish black and white.

A small guillemot, apparently of this species, I have seen quite abundant on the waters of Puget Sound during the winter season. They were quite active, and dived with as much facility apparently as the grebes, but seemed not to have the power of staying under as long, or of traversing such a distance beneath the surface as birds of the latter group. I obtained a single specimen, which, having been brought to me dead, threw no additional light upon the history of the species.—S.

This bird, in winter, remains in the bays in considerable numbers. In summer it probably frequents the ocean only, as I have frequently seen what I supposed to be this bird all the way southward to San Francisco. It often starts from under the bow or paddle wheels of the steamers and flies rapidly a short distance before plunging again. Where it breeds I never could ascertain, but think it is not anywhere in Puget Sound.

Length, $10\frac{1}{2}$; extent, $18\frac{1}{4}$. Iris brown; bill and feet black.

A specimen I found dead at Shoalwater bay, in September, 1854, was smaller, and had a different bill, being probably an immature bird.

Length, 9 inches; extent, 16.25. Iris grayish; bill and feet pale flesh color.—C.

BRACHYRAMPHUS TEMMINCKII, Brandt.

Brachyramphus temminckii, Brandt, Bull. Acad. St. Petersburg, II, 1837, 346.—Baird & Cassin, Gen. Rep. Birds, p 916.

Uria umizusume, Temm. Faun. Jap. Aves, p. 123.

Figures —Temm. Pl. Col. pl. 579.—Temm. & Schleg. Faun. Jap. Aves, pl. 79.

Sp. Ch.—Small; bill rather lengthened and slender, a crest of long erectile feathers in front; wings rather short; tail short, rounded; legs and feet short and rather weak. Crest feathers black; longitudinal stripes on the top of the head, throat, back of the neck, and longitudinal wide stripe on the sides throughout the length of the body, brownish black. Back, wing coverts, and rump light cinereous; quills and tail brownish black. Wide stripes over each eye, uniting on the occiput, white. Entire under parts white; under wing coverts white; feet light colored; culmen dark brown. *Female and winter plumage?*—No crest; head above brownish black; throat ashy brown; stripe on the sides ashy, frequently with circular spots of white.

Length of male, $9\frac{3}{4}$ inches; extent, $17\frac{3}{4}$; wing, $5\frac{1}{4}$; tail, $1\frac{1}{2}$ inch. Iris brown; bill blackish; feet gray; inside of mouth dusky anteriorly, pale posteriorly.

Hab.—Northwestern coast of America; northern Asia.

This bird is quite common during the late fall and winter months on Puget Sound. I have also seen it sparingly during the summer season, and have killed a specimen in July. I suppose that a few breed in the vicinity, although I never could ascertain certainly.

In habits this species resembles much the guillemots, diving readily and quickly when alarmed. It is probable that it has the power of using its wings while under water in the same manner as the loons and other divers; this, I suspect, from the quickness that one while under water will traverse long distances. Their power of remaining beneath the surface appears, however, to be much more limited than that of the grebes. A specimen killed by me, July 18, 1856, had the feet and legs dusky flesh color; bill *nearly black*. The upper and lower eyelids each had a small spot of white upon them, a character which, in the dried skins, may not usually be apparent. When folded the wing tips reached exactly to the end of the tail.—S.

This sea dove resides, during winter, in the sounds and bays of the Territory in large numbers, though not gregarious. In March they migrate further north for the summer, and are then seen in pairs at some distance from the shore.—C.

List of Birds heretofore reported as found in the northwest part of America, but of which no specimens have been procured by recent explorers.

Cathartes californianus, (Cuvier.)—Obtained from the Columbia river by Dr. J. K. Townsend.
Cathartes atratus, (Less.)—Audubon's Synopsis.
Falco anatum, (Bon.)—Townsend & Nuttall. Replaced by *Falco nigriceps.*
"*Falco aesalon.*"—Towns. & Nutt. European species. Replaced by *F. columbarius.*
"*Buteo vulgaris.*"—Aud. Synop.; Townsend's List. European species.
Buteo swainsoni, (Bon.)—Nuttall, (perhaps *B. montanus.*)
Buteo borealis, (Gm.)—Aud.; Nutt. Replaced west of Rocky mountains by *B. montanus.*
Archibuteo sancti-johannis, (Gray.)—Towns. List. Replaced by *A. lagopus.*
Aquila canadensis.—Towns. List. Under the name of *A. chrysaetos.*
Strix pratincola, (Bon.)—Cassin, Illust., &c. Found in California.
Otus vulgaris.—Towns. List.—Perhaps mistaken for *O. wilsonianus*, of which specimens have been collected.
Otus brachyotus.—Towns. List; Aud. Synop. Probably the *Brachyotus cassinii*, (Brew.,) which is found in California.
Nyctea passerinoides.—Aud. Synop. and Towns. Was really *Glaucidium gnoma*, (Wag.,) of which several specimens have been obtained from Washington Territory.
Nyctea nivea, (Gray.)—Aud. Synop.
Surnia ulula, (Bonap.)—Aud. Synop. Under name of *S. funerea.*
Coccygus americanus, (Bonap.)—Nutt. Man.
Campephilus imperialis, (Gray.)—Towns. (Mexican species.)
Picus villosus,? (Linn.)—Nutt. "*P. septentrionalis.*" Replaced by *P. harrisii.*
Picus pubescens, (Linn.)—Towns. List. Replaced by *P. gairdneri.*
Picus lineatus.—Towns. & Aud. A South American species. (See Pacif. R. R. Reports, IX, p. 125.)
"*Black red-backed woodpecker.*"—Townsend's List. No specimen ever obtained.
Atthis anna, (Reich.)—Towns. List. "*Trochilus anna.*"
Myiarchus crinitus, (Cab.)—Towns. List. "*Muscicapa crinita.*"
Sayornis fuscus, (Gm.)—Towns. "*Muscicapa fusca.*"
Sayornis sayus, (Baird.)—Has been obtained from California. Aud. & Towns. "*M. saya.*"
Contopus richardsonii, (Baird.)—Obtained on the Columbia by Dr. Townsend.
Contopus virens, (Cabanis.)—Aud. and Towns. "*Muscicapa virens.*" Eastern Oregon?
Empidonax traillii, (Baird.)—Aud. and Towns. Eastern Oregon?
Turdus pallasi,? (Cab.)—Towns. List. "*T. minor.*" Eastern Oregon?
Turdus fuscescens, (Steph.)—Towns. List. "*T wilsonii.*" Eastern Oregon?
Sialia sialis, (Linn.)—Audubon. "*S. wilsonii.*" Eastern Oregon?
Hydrobata mexicana, Baird.—T. (The species (varieties?) "*Mortoni*" and "*Townsendii,*" mentioned in Townsend's Narrative, have not been recognized in the late collections.)
Mniotilta varia, (Vieill.)—Aud. Synopsis. Said to be *generally* distributed.
Icteria viridis,? (Bonap.)—Towns. & Nuttall. Seen at Walla-Walla, Washington Territory.
Helminthophaga ruficapilla, (Baird.)—Audubon. "*Vermivora rubricapilla.*" East Oregon?
Seiurus aurocapillus, (Sw.)—Towns. & Nuttall. "*Turdus aurocapillus.*" East Oregon?
Dendroica coerulea, (Baird.)—Aud. & Towns. "*Sylvicola coerulea.*" East Oregon?
Dendroica striata, (Baird.) Aud. "*S. striata.*" East Oregon?

Cotyle riparia, (Boie.)—Aud. "*Hirundo riparia*," perhaps *serripennis*.
Collyrio ludovicianus, (Linn.)—Aud. & Towns. "*Lanius ludovicianus*."
Vireo virescens, (Vieill.)—Nuttall. *Vireo bartramii;* probably South American.
Vireo noveboracensis, (Bon.)—Aud. Synops.; Towns. List; perhaps *V. cassinii*.
Salpinctes obsoletus, (Cab.)—Aud. Synop.; Towns. List. "*Troglodytes obsoletus*." Eastern Oregon.
Troglodytes aedon, (Vieill.)—Aud.; Towns. Eastern Oregon.
Troglodytes americanus, (Aud.)—Nuttall's Manual. Eastern Oregon.
Troglodytes maculosa, (Nutt.)—Nutt. Only *seen* by him.
Sitta carolinensis, (Gm.)—Aud.; Towns. Replaced by *S. aculeata*, Cassin.
Sitta canadensis, (Linn.)—Aud.; Towns.
Parus atricapillus, (Linn.)—Towns. Replaced by *P. occidentalis*, Baird.
Carpodacus frontalis, (Gray.)—Towns. Common in California.
Plectrophanes ornatus, (Towns.)—Aud. "Rocky mountains."
Zonotrichia leucophrys.—Towns. "*Fringilla leucophrys*." Replaced by *Z. gambelii*, (Gambel.)
"*Fringilla maculata*."—Towns. A very uncertain bird.
Junco hyemalis, (Sclat.)—Towns. "*Emberiza nivalis*." Eastern Oregon.
Spizella monticola, (Gm.)—Towns. "*Emberiza canadensis*." Eastern Oregon.
Spizella pusilla, (Wils.)—Towns. "*Emberiza pusilla*." Eastern Oregon.
Calamospiza bicolor, (Bon.)—? *F. corydalina*. "*F. bicolor*." Eastern Oregon.
Guiraca coerulea, (Sw.)—Aud. Synop. "*Coccoborus caeruleus*." Eastern Oregon.
Pipilo arcticus, (Sw.)—Aud. Synop. Eastern Oregon.
Sturnella magna, (Sw.)—Aud.; Towns. "*Sturnella ludoviciana*." Replaced by *S. neglecta*.
Icterus baltimore, (Daud.)—Aud. Synop. Replaced by *I. bullockii*.
Scolecophagus ferrugineus, (Sw.)—Aud.; Towns. "*Quiscalus ferrugineus*," replaced by *S. cyanocephalus*.
Corvus cacalotl, (Wagl.)—Aud.; Towns. "*C. corax*." Replaced by *C. carnivorus*.
Corvus ossifragus, (Wils.)—Aud.; Towns. Replaced by *C. caurinus*, Baird.
Cyanocitta ultramarina, (Bon.)—Aud.; Towns. "*Garrulus ultramarinus*."
Ectopistes migratoria, (Sw.)—Towns. List. Eastern Oregon.
"Long Black-Tailed Pheasant."—Seen west of South Pass, by Townsend.
Tetrao canadensis, (Linn.)—Aud.; Towns. Replaced by *T. franklinii*.
Bonasa umbellus, Steph.—Aud.; Towns. Replaced by *B. sabinii*.
Lagopus leucurus, (Sw.) Towns. List. Doubtless near the snowy peaks.
Grus americana.—Aud.; Towns. Replaced by *Grus canadensis*.
Nyctiardea gardeni, (Baird.)—Towns. "*Ardea nycticorax*." Common in California.
Aegialitis montanus, (Cass.)—Towns. List. Eastern Oregon.
Haematopus ater, (Vieill.)—Aud. Synop. ? "*H. townsendii*." A South American species.
Phalaropus wilsonii, (Sab.)—Towns. Eastern Oregon?
? *Gallinago*.—? Aud.; Nutt. "*Scolopax Drummondii*" and "*S. douglasii*." Probably varieties of *Gallinago Wilsonii*, of which there are many specimens in the collections.

Tringa bonapartii, (Schl.)—Towns. "*T. schinzii.*" Perhaps found in eastern Oregon.
Symphemia semi-palmata, (Gm.)—Aud.; Towns. Perhaps found in eastern Oregon.
Gambetta flavipes, (Bon.)—Towns. List. Perhaps found in eastern Oregon.
Numenius borealis, (Lath.)—Towns. List. Perhaps found in eastern Oregon.
Porzana carolina, (Vieill.)—Towns. "*Rallus crepitans.*" Perhaps found in eastern Oregon.
Anas obscura, (Gm.)—Aud. Synop. Perhaps found in eastern Oregon.
Querquedula discors, (Steph.)—Aud.; Towns. "*Anas discors.*" Perhaps in eastern Oregon.
Bucephala islandica, (Baird.)—Nutt. "*Clangula barrovii.*" Perhaps found in eastern Oregon.
Polysticta stelleri, (Eyton.)—Aud.; Northwest coast. "*Fulig. dispar.*"
Pelicanus erythrorhynchus, (Gm.)—Aud. "*P. americanus.*" More southern.
"*Pelicanus onocrotalus.*"—Towns. Probably the preceding.
Graculus penicillatus, (Bonap.)—Obtained by Dr. Townsend from the mouth of the Columbia.
Diomedea chlororhycha, (Gm.) Aud. Synop. Either *D. brachyura*, or from South America.
"*Diomedea fusca.*"—Aud.; Towns. Either *D. brachyura*, or from South America.
Procellaria gigantea, (Gm.)—Aud. Probably from farther north.
Procellaria pacifica, (Aud.)—Aud; north Pacific coast of America. Probably from farther north.
Procellaria tenuirostris, (Aud.)—Aud; north Pacific coast of America.
Thalassidroma wilsoni, (Bon.)—Towns. Probably replaced by *T. furcata.*
Puffinus obscurus, (Lath.)—Nuttall. Very doubtful.
Larus glaucus, (Brünn.)—Towns. Doubtless *L. glaucescens.*
Larus marinus, (Linn.)—Aud. Perhaps more northern.
Rissa brevirostris, (Brandt.)—Northwest coast of America.
Rissa nivea, (Bruch.)—Russian America.
Sterna plumbea.—Towns. "*Sterna nigra.*" Eastern Oregon?
Colymbus arcticus, (Linn.)—Aud. Synop. Eastern Oregon?
Podiceps griseigena, (Gray.)—Towns. "*P. rubricollis.*" Probably *occidentalis.*
"*Podiceps minor.*"—Town. List. European species. Probably *californicus.*
Sagmatorrhina labradoria, (Cass.)—North Pacific.
Mormon corniculata, (Naum.)—Northern seas.
Mormon glacialis, (Leach.)—Northern seas.
Cerorhina monocerata, (Cass.)—Aud. "*Uria occidentalis.*" Obtained at Puget Sound and lost.
Phaleris cristatellus, (Bon.)—Aud. Northwest coast. Doubtless more northern.
Phaleris nodirostris.—Aud. Northwest coast. Doubtless more northern.
Phaleris tetracula, (Steph.)—Coasts of north Pacific. Doubtless more northern.
Phaleris camtschatica, (Cass.)—"Coasts of North America." Doubtless more northern.
Phaleris microceros, (Brandt.)—Coasts of north Pacific. Doubtless more northern.
Phaleris pusillus, (Pallas.)—Coasts of north Pacific. Doubtless more northern.
Ptychorhamphus aleuticus, (Brandt.)—North Pacific. Doubtless more northern.
Ombria psittacauda, (Esch.)—Coast of north Pacific. Doubtless more northern.

Uria grylle, (Lath.)—Replaced by *U. columba.*
Uria carbo, (Pallas.)—Coasts of north Pacific.
Uria ringvia, (Brünn.)—Pacific coast. Specimens obtained from California.
Brachyrhamphus wrangelii, (Brandt.)—Aleutian islands.
Brachyrhamphus kittlitzii, (Brandt.)—North Pacific.—S. & C.

No. 4.

REPORT UPON THE REPTILES COLLECTED ON THE SURVEY.

BY J. G. COOPER, M. D.

CLASS **REPTILIA.** Reptiles.

Order I. CHELONIA. The Turtles.

ACTINEMYS MARMORATA, Agass.

The Western Pond Turtle.

Emys marmorata, B. & G. Proc Acad. Nat. Sc. Phil. VI, 1852, 177.

Emys nigra, Hallowell, Proc. Acad. Sc. VII, 1854, 91.—Ibid. P. R. R. Surv Rep. vol. X, 1858, p. 3, pl. I.

Actinemys marmorata, Agass. Cont. to Nat. Hist. of N. A. I, 1857, 444; II, pl. 3, fig. 5—8.—Girard, U. S. Expl. Exped. Herpetology, 466, pl. XXXII.

Sp. Ch...Carapax elliptical, convex, with an obtuse vertebral ridge. Plastron sub-ellipsoid, broadest anteriorly. Limbs scaly, scales in front large, not imbricated; behind, moderate sub-tubercular. Nails rather stout. Tail above keeled sub-conical or tapering. Color black above, or olive with small black mottlings; beneath yellowish, with a black blotch in the young

This, the only turtle yet known from the west of the Rocky mountains, is common in fresh-water ponds and rivers west of the Cascade mountains, though less so in the Columbia than in the warmer ponds. Mr. Gibbs also saw turtles at the mouth of the Yakima which were probably of this species. It is rather difficult to catch, being very watchful, but will sometimes bite at a hook. The specimen I preserved was taken when about to deposit its eggs, on the 9th of June. I tried to hatch some of them, but without success. Found in the ponds about Fort Steilacoom.—C.

It attains, when full grown, a length of about eight inches, and a corresponding width. The black of the back has a brownish or rusty tinge. It is called by the Nisquallies *El-la-chick.*—S.

Order II. SAURIA. The Lizards.

ELGARIA PRINCIPIS, Baird & Girard.

The Spotted Elgaria.

Elgaria principis, B. & G. Proc. Acad. Sc. Phil. VI, 1852, 175.—Girard, U. S. Expl. Exped. Herpetology, 214, pl. XXII, figs. 9—16.

Sp. Ch.—Dorsal scales in 48 transverse, and 14 longitudinal series. Three unequal post-nasals. Preanal shields larger than the abdominal. Tail longer than body and head together.

Several specimens of this graceful and harmless little animal were obtained about the end of July, on the "Yakolt," and another prairie on the banks of the Cathlapoot'l river. They

were found under stones, and would seem to be more in the habit of hunting their insect prey on the ground than on trees or fences. Their movements were so rapid as to make it very difficult to catch them, and in struggling to escape nearly all broke off part of their tails, which, as in other reptiles, is probably a slight loss to them, a cartilaginous growth soon supplying its place. This species seems to approach nearer the cold regions than any other, as the near vicinity of the perpetual snows of the Cascade mountains and the considerable elevation of the valley causes a very moderate temperature, even in summer, in the place where it was found.

I have seen this lizard but once since, near the mouth of the Columbia among the warm sand and drift-logs on its northern bank.

When alive the colors were light brown, with black spots; belly, pinkish white.

ELGARIA GRANDIS, Baird & Girard.

The Banded Elgaria.

Elgaria grandis, B. & G. U. S. Expl. Exped. Herp. p. 212, pl. XXII, fig. 1.9.

Sp. Ch.—Dorsal scales disposed upon fifty transverse and fourteen longitudinal series. Four unequal post-nasal plates. Preanal shields smaller than the abdominal. Tail nearly twice the length of the body and head together. Above brownish olive, with eleven brown bands across the neck and back, covering one row of scales which are tipped with white. Beneath unicolor.

Found at Fort Steilacoom by Dr. Suckley.

SCELOPORUS OCCIDENTALIS, Baird & Girard.

The Western Fence Lizard.

Sceloporus occidentalis, B. & G. Proc. Acad. Nat. Sc. Philad. VI, 1852, 175.—Girard, U. S. Expl. Exped. Herpetology, 383, pl. xix, fig. 8—14.

S. frontalis? B. & G. in the same works.

Sp. Ch.—Cephalic plates rugose; anterior nearly equal to the vertex plate. One or two unequal lorals; temporal scales small keeled and acuminated. Preanals moderate, rounded, sub-emarginated; post-anal small, smooth, subtruncated, sub-emarginated. Posterior surface of thighs covered with minute lanceolated and keeled scales

Differs from *S. undulatus*, *Wiegm*, of the eastern States, chiefly in its larger and rougher dorsal scales, while the abdominal are smoother. The blue abdominal patches are also wider apart, and of different shape.

I first met with this little lizard on the western border of the Great Columbia plains, about 2,000 feet above the sea, on the eastern slope of the Cascade mountains. It frequented the pine trees, and did not occur on the open plain. I again met with them at the Pisquouse river, about latitude 48°, and at about the same elevation. In agility and grace, as well as in colors, it is precisely like its eastern congener. I obtained one also on the edge of the plain near Steilacoom, west of the Cascade mountains, where it is not uncommon; but I never saw it west of the Coast range, in the damper and cooler climate.—C.

Color.—Back, wood brown, tinged with greenish and ash gray, and spotted with triangular waved markings, on each side of the median line, of *dark* brown. At the dorsal median line these approach so nearly to each other on the opposite sides as to give, at a little distance, the appearance of waved transverse bars, extending entirely across the back. Each of these bars is bordered by a narrow margin of a greenish gray tint, resembling in color the pale mill-dew of new cheese.

Belly, *white*, bordered on each side by a *steel* blue streak 1 inch long, $\frac{1}{4}$ of an inch wide; its *inner* border one line in width, black. Outer border of said streak *greenish* blue. A patch of steel blue, divided on the throat by a narrow white line, on the median line.

Found on the edges of the prairies and in the more open portions of the forests. It appears to choose the neighborhood of rotten logs. It is quite active, running and dodging about as nimbly as a squirrel.—S.

SCELOPORUS GRACIOSUS, Baird & Girard.

The Slender Fence Lizard.

S. graciosus, B. & G. Proc. Acad. Nat. Sc. Phil. VI, Apr. 1852, p. 69.—Ib. Ex. to Great Salt Lake, 1852, p. 346; pl. v, fig. 1.

S. gracilis, B. & G. Proc. Acad. Sc. Phil. 1852, p. 175.—Girard, Herpet. U. S. Expl. Exp. 1858, p. 386; pl. xx, fig. 1-9.

Sp. Ch.—Cephalic plates smooth; anterior parietal larger than vertex plate; middle occipital very large, pentagonal. Post-anal scales large, sub-lanceolate, smooth, posteriorly notched. Posterior surface of thighs covered with small, rounded, smooth scales. Olivaceous above, with a double series of crescent-shaped black spots on the back and two lateral light streaks, between which is a row of black spots. Beneath, yellowish; under surface of head clouded with bluish. Male with an elongated blue patch on each side of the abdomen.

Found at the Dalles, Oregon Territory, or at Steilacoom. At Fort Dalles they live in the cracks of the basaltic rocks, which their colors resemble in tint, being darker than those at Steilacoom. They usually emerge from their hybernation about the middle of March.—S.

CROTAPHYTUS WISLIZENII, Baird & Girard.

C. wislizenii, B. & G. Pr. Acad. Nat. Sc. Phila. VI, Apr. 1852, p. 69.—Ib. Ex. to Great Salt Lake, 1852, p. 340; pl. iii.

C. gambelii, B. & G. Pr. Acad. Nat. Sc. Phila. VI, 1852, p. 126.

C. fasciatus, Hallowell, Pr. Acad. Nat. Sc. VI, 1852, p. 207.—Ib. Sitgreaves Ex. to Zuñi, 1853, p. 115; pl. v.

Sp. Ch.—Head proportionately narrow and elongated. Cephalic plates and scales on the back very small. Yellowish brown, spotted all over with small patches of deep brown or black, becoming partial or complete rings on the tail.

Found at the Dalles, Oregon Territory, and up Snake river, near Fort Boisé.—S.

TAPAYA DOUGLASSII, Girard.

The Oregon Horned Toad.

Agama douglassii, Bell, Trans. Linn. Soc. London, XVI, 1833, 105; pl. x.—Harlan, Med. & Phys. Researches, 1835, 141, fig. 3.

Phrynosoma douglassii, Wagl. Natural Syst. Amph. 1820, 146.—Holbrook, N. A. Herpet. II, 1842, 101; pl. xiv.—Girard, Stansbury's Ex. to Salt Lake, 1852, 361 and 362; pl. vii, figs. 6–10.

Tapaya douglassii, Girard, U. S. Expl. Exp. Herpet, 397; pl. xxi, figs. 1–5.

Sp. Ch.—Head large, depressed; vertex slightly declivous; snout sub-convex or rounded, sub-depressed at the nostrils. Cephalic plates moderate, very rugose, occipital and temporal spines reduced to small acerated cones. Sub-maxillar shields moderate and ridged. Auricular aperture granular, sub-tubercular, or sub-denticulated in front. Labial plates moderate. Mental scales small and unequal; gular folds minutely scaly. Abdominal scales moderate, sub-rhomboid, posteriorly obtuse. Fermoral pores distant; the series from either side approximating upon the inter-femoral region without being continuous.

I obtained numerous specimens of this singular animal in the vicinity of the Yakima river, in August, and saw them as far as latitude 48° 30′ north, on the open plains, usually among rocks and sand. They all had the gray color which they retain in alcohol, excepting one, which was of a brick red on the back, but beneath white, like the rest. These colors resemble those of the stones among which they live, and it is supposed by some that they have the power of changing their hue like the chameleon, and like the better known tree toad of the Atlantic States. Though ferocious in appearance they are perfectly harmless; yet the Indians believe them to have the power of producing a poisonous wound with their blunt spines, and it is possible that such a wound, *if made*, might sometimes be troublesome. They do not attempt to bite, and are so slow in motion as scarcely to get out of the way. They are, no

doubt, like the ugly but useful toads, more useful than ornamental, as their food consists chiefly of insects.

As might be supposed from the locality, the specimens found in Washington Territory are smaller than those from Oregon and Utah.

I never saw nor heard of its occurrence west of the Cascade mountains.—C.

This animal was found by me at Fort Benton, on the Upper Missouri, and again on the plains west of the Rocky mountains, as far as the Cascade range.

One was caught in September, near the Snake river, Oregon Territory. At Christmas, although having been shut up since its capture in an empty match box, it was still quite lively. When irritated it would spring in a most threatening manner at anything pointed at it, at the same time opening its mouth widely, and *audibly hissing*, after which it would inflate its body and show other evident marks of anger. It died about February 1, probably from starvation, as the heat of the house prevented torpor, and there were no insects upon which to feed it.—S.

Order III. OPHIDIA. Serpents.

CROTALUS LUCIFER, Baird and Girard.

The Western Rattlesnake.

Crotalus lucifer, Baird & Girard, Proc. Acad. Sc. Phil. VI, 1852, 177.—Ibid Cat. N. A. Reptiles, 1853, 6.—Girard, U. S. Expl. Exped. Herpetology, 187, pl. XV, figures 1 to 6.

Sp. Ch.—Dorsal rows of scales, twenty-five; exterior one smooth; second and third obsoletely carinated. Tail and posterior part of body with fifteen to twenty half rings. A series of dorsal hexagons or octagons, also two small irregular series on each side. A light stripe from the supra-ocular crosses the angle of the mouth on the third and fourth series of supra-labials.

A specimen of this rattlesnake shot in the Yakima valley agreed very well with the description given by Baird and Girard in their Catalogue of Reptiles. Another, however, killed about September 25, in latitude 48°, on the Columbia river, was of a pure white ground color with beautiful bright sea-green blotches on the back. It had probably just changed its skin and had not acquired its permanent brown or yellow ground color with dark brown blotches.

Rattlesnakes are much less numerous north of the Columbia than south, these two being all I met with in two months' travelling through the interior. None are found west of the Cascade range, except an occasional straggler carried down the Columbia river.—C.

Specimens vary in the ground color from white to yellowish brown. The spots vary from greenish to chestnut brown. In the young a light stripe crosses the vestae between the supra-orbital scales, and another connects it with the ash-color of the back of the head.

One specimen was killed, from the *mouth* of which three young ones were said to have escaped.

Found from the Dalles up the Columbia and Snake river. At the Dalles they are so numerous as to be very annoying, having been known to enter dwelling houses. Since the introduction of hogs in the vicinity they seem to have diminished. The Indians use the tail of the rattlesnake as a medicine to produce abortion.—S.

CROTALUS CONFLUENTUS, Say.

Prairie Rattlesnake.

Plate XII.

Crotalus confluentus, Say in Long's Exped. Rocky mountains, II, 1823, 28.

Crotalus confluentus, B. & G. Cat. N. A. serpents, p. 8.

Sp Ch.—Head sub-triangular. Plates on top of head squamiform, irregular, angulated, and imbricated; scales between superciliaries small, numerous, uniform. Four rows of scales between the sub-orbital series (which only extends to the centre of the orbit) and the labials Labials 15 or 18, nearly uniform. Dorsal series 27-29. Dorsal blotches quadrate, concave before and behind; intervals greater behind. Spots transversely quadrate posteriorly, ultimately becoming 10 or 12 half rings. Two transverse lines on superciliaries, enclosing about one-third. Stripe from superciliary to angle of jaws crosses angle of the mouth on the second row above labial. Rostral margined with lighter.

Milk river, Nebraska.

This species is very numerous on the Missouri river and its tributaries, between Fort Union, Nebraska, and the Rocky mountains. In July and August they are found very common in the dry cañons, and among the willow brush, and cotton-wood forests along the banks of the rivers. They are then sluggish and stupid, being, according to popular belief, "blind," and are said to be at that season exceedingly venomous. This stupid condition during the drought of summer is not uncommon to many species of snakes, the torpidity being analogous to that of hybernation, and may therefore be called *aestivation*. Hunters have told me that the serpents are "blind," because they are at that time about shedding the cuticle, and that as evidence of loss of vision the snake, when provoked, will "strike wildly."—S.

EUTAINIA ATRATA, Kennicott.

Sp. Ch —Body compact, cylindrical, moderately stout Head small and narrow, eye very small; eight upper labials sixth largest Dorsal rows of scales seventeen, exterior row largest, higher than long, and very slightly carinated; the next row smaller, but considerably larger than the third, distinctly carinated. Scales of the central dorsal rows proportionately shorter than in *E. corcinna* and *E. Pickeringii* A very broad, deep lemon yellow dorsal stripe, covering nearly three rows, and distinct from head to tip of tail The rest of the upper parts entirely deep blue black, without a trace of the lateral stripe or of light spots. Abdomen entirely uniform greenish slate, yellowish green under the head.—Kennicott.

California.—C.

EUTAINIA COOPERI, Kennicott.

Plate XV, Reptiles, Fig. 1.

The Red Striped Garter Snake.

Eutainia cooperi, Kenn. Proc. Acad. Nat. Sc. Philad. 1859, p —.

Sp. Ch.—Body stout, compact, and cylindrical, as in *E. radix*, dorsal rows of scales only seventeen. Head short, depressed anteriorly. Labials seven above, the 5th twice as large as the 7th, being the largest of all, and greatly developed. Colors, (in alcohol,) above, uniform blackish brown, without spots, or olivaceous brown with two rows of black spots, as in *E. vagrans*, but which do not encroach upon the stripes. Dorsal stripes yellowish, distinct on one and two half rows; lateral stripe usually distinct, covering the second and part of the third rows; the row below being of the same color as the back. Abdomen usually slate color, sometimes lighter. Body frequently suffused with red, especially the dorsal stripe; abdomen sometimes tinged with red.—Kennicott.

The most highly colored specimens of this snake were caught in one spot, on the 2d of August, in a small prairie in the Cathlapoot'l valley. They had the colors represented in the plate, but which fade after long keeping in alcohol. Others obtained in the Willopah valley, in 1854, had dark stripes, and *young* ones were without spots.—C.

EUTAINIA PICKERINGII, Baird & Girard.

Pickering's Garter Snake.

E. pickeringii, B. & G. Cat. N. Amer. Serpents, 1853, p. 27.—Girard, Expl. Exped. Reptiles, p. 150, pl. XIII, fig. 14-20.

Sp. Ch.—Body rather slender; dorsal rows of scales nineteen, the first large and moderately carinated. Head large and high, with the upper labials well developed, seven in number, the fifth largest. Color, black above; the stripes three, greenish

or brownish yellow, (fading in alcohol.) A series of irregular vertical bars on the sides from the third to sixth rows, confluent with the lateral stripe, which covers the second and third rows. Abdomen and first dorsal rows, slate color, bluish, or greenish.

Var. *a*. Without the lateral spots, the space being black like the back.

β. Entirely black, the stripes being so narrow as to be almost obsolete; specimens showing every degree of these variations. Sides of head usually more or less mottled with brown and green, the most so in the largest specimens.

Obtained in all the western portions of the Territory, usually in or near the forests. The commonest species, but more rare, east of the Cascade range.—C.

The variety with red spots was not found by me near Puget Sound, though common at the Dalles and Vancouver.

The colors of my specimen, *when living* were as follows: In the spring, dorsal scales of a *very dark* invisible green, (almost black.) Dorsal and lateral stripes, *pea green*. Chin, *white*. Belly greenish white anteriorly, becoming posteriorly bluish white and bluish slate, and the under surface of tail "blue black."

In mid-summer the colors remain the same, except that they are darker, (deeper.) This species exists in great abundance near Steilacoom and Nisqually. They are found on the gravelly prairies and in the vicinity of the numerous small lakes of this section of country. About the first of April they begin to come out of winter quarters, and can be seen at mid-day sunning themselves near small clumps of scrub-oak bushes, to which they retreat when alarmed. A little later they are found in couples or in small companies. Although they are rarely ever found more than one-eighth of a mile from water, they are, nevertheless, still more anxious to be close to it as the season advances. They will then (in May and June) be found lying close to the water, on the lake shores in the grass, and among the sedge of the marshes, and even upon small bog islands, as much as fifty yards from the shore.

In summer, like other members of this genus, they are found lying in small pools, and in the water at the edges of the lakes, during the heat of the day. They appear to be a harmless, lazy species, and, as above stated, exceedingly fond of the water.

They rarely exceed twenty-five inches.—S.

EUTAINIA LEPTOCEPHALA, Baird & Girard.

The Small-Headed Striped Snake.

Eutainia leptocephala, B. & G. Cat. N. Amer. Serpents, 1853, p. 29.—Girard, Expl. Exped. Herpetology, p. 151, pl. XIII, fig. 7–13.

Sp. Ch.—Body rather long and slender. Head small, narrow, and flattened; not much larger than neck. Dorsal rows 19, the two exterior rows larger, the outer not carinated. Scales on most of the tail not carinated. Labials narrow; 7 above, fifth and sixth largest. Above, light olive brown, or darker, with about 130 small brown spots in two series on each side the vertebral line, occuring on alternate scales, sometimes wanting. Vertebral stripe faint, on a single row of scale; lateral stripe in young specimens partially apparent anteriorily. A blackish stripe from the post-orbital back to the angle of the mouth, sometimes touching the labials.

Found in all the western portion of the Territory.—C.

Found apparently in all parts of the Territory and in Oregon, specimens having been obtained in the St. Mary's valley by Lieutenant Mullan, and on the Snake river, near Fort Boisé, by myself.—S.

EUTAINIA VAGRANS, Baird & Girard.

The Large-headed Striped Snake.

Eutainia vagrans, B. & G., Cat. N. Amer. Herpetol., I, 1853, p. 35.—Girard, Expl. Exped. Herpetol., p. 154, plate xiv. figs. 5–10. (See plate XVII, Reptiles, Beckwith's P. R. R. Report, vol. X.)

Sp. Ch.—Body long and slender; head short, broad, and high, thicker than neck. Dorsal rows 20 or 21; stripes faint or partly wanting, with two rows of brown or black spots, about one hundred in number, on each side, confluent with the stripes. Scales of tail and outer dorsal row distinctly carinated. Labials, 8 above, the sixth and seventh largest, higher than wide. Ground color above light olive brown, the stripes paler; beneath, slate color.

Found in the Yakima valley in August, but is known to extend also west of the Cascade range.—C.

Found at Puget Sound and at Fort Boisé, on Snake river. While on Boisé river I saw a snake apparently of this species, which, upon being pursued, retreated to a small hole in the ground, the calibre of which was just sufficient to admit its occupant. Whether the hole had been excavated by the serpent, or was simply the burrow of some small *rodent*, I had no means of ascertaining.—S.

EUTAINIA CONCINNA, Baird & Girard.

Plate XV, Reptiles, Fig. 2.

The One-striped Garter Snake.

Tropidonotus concinnus, Hallow. Proc. Acad. Nat. Sc. VI, 1852, p. 182.

Eutainia concinna, B. & G. Cat. N. Amer. Serpents, 1853, p. 146.

Sp. Ch.—Body moderately lengthened. Head small. Dorsal rows, 21, carinated. Vertebral stripes yellow; *no* lateral stripes, but in their place a series of 75 salmon red spots or bars extending from the second to sixth rows of scales, and covering from half to two scales width. Ground color black, belly slate or greenish black, whitish anteriorly. Head reddish yellow, tinged with brown.

Found at Vancouver, and not observed along the coast.—S.

Were it not for the distinction in the scales of the head and back, which in this genus are relied upon as specific characters, and even decide the species into groups, these five species might be combined into two by their colors. *E. cooperii*, *leptocephala*, and *vagrans*, approach each other very closely, and *pickeringii*, especially the variety with one stripe, much resembles *concinna;* in fact, some specimens have much the appearance of being hybrids. More observations and specimens will be required to decide what characters are truly specific.

All these garter snakes have very similar habits, and are equally harmless. It is generally believed that those with carinated scales, like the three last species, are more aquatic in their habits, and I did notice this to be the case with *vagrans* and *leptocephala;* but all of them live not far from water, and in the dry season, at least, are found almost always near it. Another favorite resort is the Indian burying-grounds, where the corpses, placed above ground, attract numerous insects; and it is these, not human flesh, which forms the food of the beautiful little garter snakes, notwithstanding the association of graves and serpents so common in the minds of poets and people.

The Indians have something of the same natural (?) horror of even harmless snakes that pervades more civilized races; and it is due to the same ignorance, for they have frequently told me that snakes were poisonous which I handled with perfect impunity. Perhaps, also, superstition is connected with this antipathy.—C.

EUTAINIA HAYDENII, Kennicott. N. S.

Plate XIV.

Sp. Ch.—Head broader and more depressed in front than in *E. radix*. Form stout, compact, and cylindrical, most so of the genus, except *E. radix*. Ground color light olive green, with three longitudinal yellow stripes, and six series of distinct black spots. In life some red coloring visible on the sides. Lateral stripe on the third and fourth rows less sharply defined than in *E. radix*. Dorsal rows, 21.—Kennicott.

Fort Pierre, Nebraska.—Dr. Evans.

EUTAINIA FAIREYI, B. & G.

PLATE XIII, adult; XVI, young.

Eutainia Faireyi, B. & G. Cat. N. A. Serpents, p. 25.

SP. CH.—Body above deep uniform glossy black. A dorsal stripe of yellowish green one and less than two half scales wide; and one lateral stripe on each side on the third and fourth rows, usually of the same color. Sometimes the dorsal stripe is more deeply yellow than the lateral. Dorsal scales below the lateral stripe as black as above it. Abdomen greenish white. Form a little stouter than *E. saurita*. Head large. Tail rather less than one-third of the total length. Dorsal scales in nineteen rows.—KENNICOTT.

Illinois.

EUTAINIA RADIX, B. & G.

E. radix, B. & G. Cat. N. A. Serpents, p. 34.

SP. CH.—Body stout, compact, and cylindrical; tail short. Head short, narrow; nose pointed. Ground color above very dark olive brown, sometimes black, with three sharply defined, rather narrow, yellow longitudinal stripes, and six series of very indistinct black blotches which are not visible in the darker specimens. Dorsal rows, 21. Lateral stripe on the third and fourth rows.—KENNICOTT.

Fort Snelling, Minn.—S.

REGINA KIRTLANDII, Kennicott.

PLATE XX, FIG. 2.

Regina kirtlandii, KENNICOTT, Proc. Phil. Acad. Nat. Sci., 1856.

SP. CH.—Body stouter than in any other species of Regina or Nerodia; head smaller and tail shorter. Head depressed, very small, short, proportionately broad behind, continuous with the body, the neck being without any visible contraction. Crown very convex, sloping to the snout. A single nasal, with the nostril in its centre. One large ante-orbital, two large post-orbitals. Vertical, broad, sub-hexagonal. The body enlarges rapidly from the head to its full size, continuing of about the same size to near the anus, where it contracts suddenly; the tail being very small. Ground color light reddish brown, with four dorsal series of circular black spots, the two central series smallest. Abdomen uniform reddish, with a row of small black spots on each side. Dorsal rows 19, all strongly carinated.—KENNICOTT.

Illinois.

REGINA GRAHAMII, Baird and Girard.

The Prairie Water Snake.

PLATE XIX, FIG. 1.

Regina grahamii, B. & G. Catal. N. Amer. Serpents, 1853, p. 47.

SP. CH.—Dull dark brown, with a dorsal light brown line, margined on each side by a narrow indistinct black line. A broad yellowish stripe on the first, second, and third rows, margined above by an indistinct black line on the fourth and fifth rows, and below by a distinct narrow black line on the lower fourth of the first lateral row and extreme end of the abdominal scutellae. Abdomen yellowish, tinged posteriorly in the adult with olive, with a single central row of small subtriangular black spots posteriorly, which disappear on the anterior third of the body, and are sometimes obsolete in young specimens. Dorsal rows of scales, 19.—KENNICOTT.

Illinois.

SCOTOPHIS VULPINUS, Baird and Girard.

The Fox Snake.

PLATE XXII.

Scotophis vulpinus, B. & G. Catal. N. Am. Serpents, 1853, p. 75.

SP. CH.—Body stoutest of the genus; tail thick. Head large, very stout, broad, and rounded throughout. Snout short, broad; vertical plate as broad as long; superciliaries broad; loral elevated as high as long. Eye smallest of the genus.

Dorsal rows, 25, the central distinctly carinated. Abdominal scutellae about 203. Light yellowish brown, with a dorsal and two lateral series of chocolate brown blotches. No suffusion of black in old specimens as in *S. alleghaniensis*. A frontal brown bar and a post ocular vitta; obsolete in old specimens.—KENNICOTT.

Fort Snelling, Minnesota.

A full grown specimen of this serpent was brought to me alive, at Lake Amelia, near Fort Snelling, Minnesota. When provoked it expressed its irritation by vibrating the tip of its slender tail, which, when striking a crumpled dead leaf or any other small object, would produce a well marked rattling noise, very similar to that made by the rattle snake under the same circumstances.—S.

PITUOPHIS WILKESII, Baird & Girard.

The Oregon Bull Snake.

Pituophis wilkesii, B. & G. Cat. N. A. Reptiles, I. 1853, 71.—GIRARD, U. S. Expl. Exped. Herpetology, 137; pl. ix, figs. 1–7.

Pituophis catenifer, B. & G.? *P. ounectens*, B. & G.? op. cit.

SP. CH.—Two pairs of post frontal plates. Dorsal scales in 29 to 31 series; the three outer series smooth. Tail about a sixth of the total length. Post-ocular vitta running over the last labial to the angle of the mouth. Ground color (yellowish,) with a dorsal series of sub-quadrate, and two lateral series of sub-circular blotches.

From a large number of specimens in the Smithsonian Institution, lately examined, it appears probable that the two latter names quoted as supposed species will become synonyms, in which case *P. catenifer* will be the name of the species. The Californian specimens, on which they were founded, differ chiefly in the *proportions* of the cephalic scales, and the size of their spots, which are largest in *catenifer*.

A specimen caught in the Yakima valley, on August 28th, differed from the description above given only in the ground color, which was pale gray instead of yellowish, a tint doubtless caused by the alcohol.

This large snake, sometimes three or four feet long, is like the others of the genus commonly called "Bull" and "Pine snake," quite harmless, and must destroy a great many mice, gophers, and other vermin. Not found west of the coast range.—C.

The ground color gray, sometimes tinted with brownish or yellowish. Spots brown, most dark posteriorly, sometimes margined with black. Ground color of belly yellow; spots black. Found sparingly at Puget Sound, but common at the Dalles and up Snake river to Fort Boisé. It is, in fact, mostly confined to the open country. The length of the adult rarely exceeds three feet.—S.

PITUOPHIS SAYI, Baird & Girard.

Prairie Bull Snake.

PLATE XXII.

Coluber sayi, SCHLEGEL, (non Holbr.)—Essai Phys. Serp. Part. descr. 1837, 157.

"*Coluber mellanoleucus*, var. SAY."—HARL. Jour. Acad. Sc. Philad. V, 1827, 360.—IB. Med. and Phys. Researches, 1835, 123.

Pituophis sayi, B. & G. Catal. N. Am. Serpents, 1853, p. 152, (under *Coluber sayi.*)

SP. CH.—Head proportionately small, crown rounded throughout, snout very pointed. Rostral very narrow, projecting, the apex elongated and pointed, extending far back between the prefrontals. Verticals short, broad, nearly as wide anteriorly as long. Nasals and loral large. One ante-orbital, rarely two; three post-orbitals, rarely four. Dorsal scales shorter and more rounded than in *P. bellona*. Ground color whitish or reddish yellow, a dorsal series of sub-quadrangular blotches, with 3 or 4

small series on each side, the blotches brown on the middle of the body, black towards the head and tail. Abdomen yellowish white, with an external series of rather large black spots on each side, inside of which are two irregular series of wavy black blotches. Head much spotted with black and labials heavily margined with the same. A pitch black post-ocular with a frontal band, and sub-orbital vertical bar.—KENNICOTT.

The prairie bull snake is very numerous in eastern Minnesota, where I obtained many specimens. They are said to be occasionally ploughed up by the settlers when breaking the prairie sod.

During the rutting season they seem to follow each other by the scent, as I noticed upon one occasion that having captured a fine living individual, and placed it with others in a barre near my tent, a very large snake of the same species was found a short time after but a short distance from my reptile prison, being on its way in a direct line from the locality whence the other had just been brought.

A nearly similar action was observed with another species. The facts might have been simply accidental, although if so, seemed strangely to confirm the popular belief on the subject. Whether the mates of these and other species do follow each other by the scent is well worthy of future investigation. The fact seemed so impressed on the minds of my companions that the naturalist's tent was for a time *tabooed*.

A very large *Pituophis* was collected by me in Nebraska. Its colors were considerably darker than those of the Minnesota specimens. The length of the skin, stretched somewhat in taking off, was eighty-seven inches.—S.

BASCANION VETUSTUS, Baird & Girard.

The Green Racer.

PLATE XX, FIG. 1.

Bascanion vetustus, B. & G. Catal. N. A. Reptiles, I, 1853, 97.—GIRARD, U. S. Expl. Exped. Herpet. 127. Pl. VIII, figs. 12—19.

SP. CH.—Width of head equal to half its length, taking the greatest dimensions. Inferior post-orbital in a notch between the fourth and fifth labials. Colors, when fresh, pale green above, straw yellow beneath, sometimes varying to brownish above.

Three specimens of this handsome snake were caught in or near the Yakima valley, in August, 1853. Like its relative, the black snake of the Atlantic States, it is perfectly harmless, and does not even bite usually when handled. It runs with great rapidity, and the popular name given both to this and to the allied, if not identical, *B. flaviventris*, of Nebraska and Kansas, is very appropriate. Not found west of the Coast range.—C.

A specimen caught August 8, at Fort Steilacoom, had the following colors when fresh: *Upper parts of a uniform brownish slate color*. Edges of scales blackish. Skin colored the same as the central portions of the scales. Belly bluish white, with a tinge of yellow anteriorly and under the chin. Caudal scutella much darker than those of the middle.

Specimens from the Dalles partake of the characters of *B. flaviventris*, and are of a pale olive, becoming brown posteriorly, sides bluish. Young specimens are ash-colored above, with chestnut spots; head olive and spotted. Beneath pale greenish yellow, with small reddish brown spots anteriorly. In older ones the blotches of the back become confluent and finally unicolor.

It has the same habit of climbing in bushes common to the black snake of the eastern States. Found sparingly at Puget Sound.—S.

MASTICOPHIS TÆNIATUS, Baird & Girard.

The Californian Whip Snake.

Leptophis tæniata, Hallowell, Proc. Acad. Nat. Sc. Phil. VI, 1852, p. 181.

Masticophis tæniatus, B. & G. Catal. N. Am. Rep. 1853, p. 103.—Baird, P. R. R. Rep. Vol. X, (Beckwith's Exp.) . Pl. XXIII.

Sp. Ch.—Dorsal rows 15, tail about one-third of the total length. A broad brown dorsal stripe margined by a darker line. The four outer rows of scales on each side yellow, with a darker line through the centre of each. A dark line along the edge of the abdomen, making six dark lines on each side. Beneath yellowish.

A young specimen of this species was obtained on Snake river, Oregon Territory. Nothing regarding its habits was observed.—S.

DIADOPHIS PULCHELLUS, Baird & Girard.

The Western Ring Snake.

Diadophis pulchellus, B. & G. Cat. N. Am. Serpents, 1855, p. 115.

Sp. Ch.—Dorsal scales in fifteen rows; occipital ring broad; colors, (in alc.,) above uniform dark greenish brown, beneath orange with small black spots irregularly scattered both above and below from head to tail, sometimes wanting. Color of abdomen extending on to lateral dorsal scales.

A living specimen had the following colors: Top of head glossy, of a dark brownish olive with a bluish tinge, several of the plates being indistinctly spotted with black. Occipital ring deep reddish orange, having a diagonal width of three scales. A band along the back eleven scales wide of a slaty brown, rather pale, and with a slight greenish tinge anteriorly; posteriorly it becomes more bluish, losing its greenish cast and narrowing on the tail from 9 to 2 scales in width. Chin, belly, and first two rows of dorsal scales bright, fiery orange. This color deepens posteriorly, becoming more red, the sub-caudal scutella being almost the color of red sealing-wax. A row of black spots on each side, each spot being on the posterior edge of the first row of dorsal scales. The abdominal scutellæ have two well marked rows of small black spots besides several other partial or irregular rows. All these spots are found on the posterior edges of the scales.

The occipital ring is margined posteriorly by a series of black spots, showing an apparent attempt in nature to form a black linear margin.

This is the only specimen of the genus or the species that I have seen west of the Rocky mountains. The natives do not say that it is abundant, and the white settlers have only occasionally observed it. Fort Dalles, Oregon Territory, May, 1855.—S.

CELUTA AMŒNA, B. & G.

Plate XIX, Fig. 2.

Ground Snake; Worm Snake.

Celuta Amœna, B. & G. Cat. N. A. Serpents, 1853, p. 129.

Coluber amœnus, Say, Journ. Acad. Nat. Sc. Philad. IV, 1825, 237.—Harl. Journ. Acad. Nat. Sc. Philad. V, 1827, 355; and Med. & Phys. Res. 1835, 118.—Storer, Rep. Rept. Mass. 1839, 226.

Calamaria amœna, Schl. Ess. Phys. Serp. Part. descr. 1837, 31. Pl. i, figs. 19 and 20.

Brachyorrhos amœus, Holbr. N. Amer. Herp. III, 1842, 115. Pl. xxvii.

Sp. Ch.—Above uniform chestnut brown, opalescent; light yellow (bright salmon-color in life) beneath. Dorsal scales in 13 rows.

Western Missouri.

WENONA PLUMBEA, Baird & Girard.

The Brown Wood Snake.

Wenona plumbea, B. & G. *Wenona isabella?* B. & G. Proc. Acad. Sc. Philad. VI, 1852, 176 ; Ibid. Catal. N. A. Reptiles, I, 1853, 139, 140.—Girard, U. S. Expl. Exp. Herpet. 1858, 112, 113, pl. VII, f. 1–14.

The distinctness of the above supposed two species is uncertain from the small number of specimens examined. They differ in the frontal plates and in the orbitals, but their colors are described as nearly the same, *plumbea* being lead color above, and *isabella* light brown ; both yellow beneath, the latter more dull.

Not very uncommon at Puget Sonnd. Specimens appear to unite the characters of the species described by Baird and Girard.—S.

The short, thick, and clumsy form of these snakes, with their small pointed head covered with scales like those of the back; very small eye and mouth; numerous small smooth scales, and blunt tail, at once distinguish them, though in color they much resemble the "green racer," heretofore described, when in its old skin, before changing it in July.

About June 1, 1855, I obtained a large specimen of the above snake under the loose bark of a log, where it seemed to have crawled to escape from the light. It appeared dazzled, and did not attempt either to escape or to bite. This snake, though unpleasant in appearance, is perfectly harmless, and, like most others, useful in destroying insects and mice. It is the nearest representative of the *boa constrictor* in the United States, but little is known of its habits.—C.

Order IV. BATRACHIA. Soft Skinned Reptiles.

Tribe I.—**Anoura.**—Tailless Batrachians.

BUFO BOREAS, Baird & Girard.

Bufo boreas, B. & G. Expl. Exped. Herpet. p. 74, pl. VI, fig. 4–9.

Sp. Ch.—Upper surface of head plane ; skin not adhering to the skull, and smooth ; green, with a dorsal yellow vitta ; pustules reddish ; beneath of a soiled white, maculated with black.

Distinguished from *B. columbiensis* by having the fore arm longer than the hand or arm, both pairs of legs longer, and hind foot proportionately longer, and the soles nearly smooth. The bright colors above described are those of the young. When alive the colors vary in shade, but are similar in pattern in all examined. That best marked has the back olive brown, darker posteriorly; tubercles dark brown; spots on legs nearly black, both surrounded by a narrow edging of straw yellow, becoming greenish, and mixed with the brown on the sides. The dorsal stripe is bright yellow, (wanting in some specimens;) angles of mouth and inner sides of thighs yellow also; belly pale brownish white, with black spots posteriorly; iris rich gold color, veined with black; canthi black. Another specimen had a brown circle around iris, and green lids.

This toad is abundant west of the Cascade mountains, and has habits similar to those of most other true toads, hopping about at dusk after its insect prey; and, although disagreeable to many persons, is perfectly harmless and very useful.—C.

BUFO COLUMBIENSIS, Baird & Girard.

The Columbia Toad.

Bufo columbiensis, B. & G. Proc. Acad. Nat. Sci. Philad. VI, 1853, 378.—Girard, Proc. Acad. Sc. VII, 1854, 87.—Ibid. U. S. Expl. Exped. Herpet. 77, pl. V, figs. 4—9.

Sp. Ch.—Upper surface of head plane; skin adhering to the skull and granulated. Parotids and tympanum small. A membranous tarsal fold; toes palmated. A dorsal white vitta and an oblique dark patch beneath the eye.

Found in Washington Territory west of the Cascade mountains. Nothing distinctive was noticed in its habits.—C.

RANA PRETIOSA, Baird & Girard.

The Salmon Frog.

Rana pretiosa, B. & G. Proc. Acad. Sc. Phil. VI, 1853, 378.—Ib. U. S. Expl. Exped. Herpetology, 21, 1858; pl. II, figs. 13—18

Sp. Ch.—Tympanum rather small. Hands smooth. Feet granulated underneath, fingers slender and tapering; toes webbed, terminal joint of longest free. A small flattened horny process at the base of the inner toe and a minute conical tubercle between the fourth and fifth. Two depressed dorsal series of pores, one on each side; a glandular ridge along the upper jaw.

When living the colors in full grown specimens are: nose and cheek pea-green tinged with gold; a stripe of the same hue down each side of the back. Remainder of back from eyes to tail reddish brown, with a black streak. Legs paler with transverse black bars. Flanks and inner sides of thighs salmon red, growing darker towards feet. Belly white, sometimes with brick-red spots; thighs posteriorly and sides spotted with white. A wood brown stripe on each side of head; lips tinged with gold color. Size of body from two to three inches long.

Younger specimens pale green above; thighs pale brown; no reddish tints beneath, white spots larger and more numerous.

I found frogs nowhere common in the Territory. The specimens described above were found about springs near Shoalwater bay, and when alive are very beautiful and interesting little animals.

RANA HALECINA.

The Spotted Frog.

Plate XXIX, fig. 7.

Although the distance of locality, which gives the species a wider range than any other reptile of the Atlantic coast, would *a priori* indicate distinctness of species, a careful comparison by Professor Baird does not show any tangible points of difference. Specimens of this frog were collected at Fort Dalles.—S.

HYLA REGILLA, Baird & Girard.

The Oregon Wood-Frog.

Hyla regilla, B. & G. Proc. Acad. Nat. Sc. Phila. VI, 1852, 174; and 1853, 301.—Ibid. U. S. Expl. Exp. Herpet. 60, pl. III, figs. 13—18.

Hyla scapularis, Hallowell, Proc. Acad. Sc. VI, 1852, 183.

Sp. Ch.—Vomerine teeth disposed upon two circular groups. Fingers free, toes semi-palmated. Skin above tuberculous, beneath glandulous. Green, with orange reflections, sometimes maculated or banded with blackish brown.

This brilliant little wood-frog abounds in some localities and at some seasons, but at others is rarely met with, as it seems to seek the high trees. In September I found vast numbers of

them around a spring on the high mountain spur between the Yakima and Columbia rivers, over 4,000 feet above the sea, and also obtained a few at Chequass, in the Klickatat Pass, at the same elevation. I was inclined to think that the great dryness of the summer east of the Cascade range had driven them from the trees to seek for water. I found them also, but rarely, at Shoalwater bay, where they seem to leave the trees less often. Those which have brown markings are much larger than the others, and not so frequently found.

The shrill "peep" of this frog is often heard, but it is difficult to see the performer in its shelter among the green leaves.—C.

Specimens of this beautiful little tree toad, caught April 3, 1855, had the ground color of upper parts pale green, mottled by small irregular patches of a slightly deeper shade, which are bordered by streaks of black. Inside of thighs and legs of a yellowish flesh color. Black streak from the shoulder to the end of the nose, passing through the centre of the eyes. Caught in a dry situation on the upland near Fort Dalles. It is found at a considerable distance from water or trees. It is fond of clinging to rocks, but otherwise had the habits of a tree toad.—S.

Tribe II.—**Uradela.**—Tailed Batrachians.

TARICHA TOROSA, Gray.

The Warty Salamander.

Triton torosus, Esch. Zool. Atl. V, 1833, 12 Taf. xxi, fig. 15.

Triton ermani, Wiegm. in Erman's Reise um die Erde, 1835, and Arch. fur Naturg, 1836, II, 250.

Salamandra beecheyi, Gray; Beechey's voyage, Zool. 1839, 99.

Triton granulosus, Skilton, Amer. Journ. Sc. VII, 1849, 202; pl. figs. 4 and 5.

Notophthalmus torosus, Baird, Journ. Acad. Nat. Sc. Philad., I, 1850, p. 284.

Pleurodeles californiae, Bibr. Mus. Zool. Soc. (Gray.)

Taricha torosa, Gray, Catal. Amph. Brit. Mus. II, 1850, p. 25.—Girard, U. S. Expl. Exped. Hespetology, 1858, p. 5, figs. 1–8.

Sp. Ch.—Tail longer than the head and body together, compressed, provided with a slightly elevated membranous keel upon its upper and lower edges. Tip of toes callous; inner toes in both pair of limbs very small. Skin granular. Color, rich dark brown above, with minute pale dots; sides and beneath, orange or yellow; iris, gold color.

This salamander is usually found during the day crawling slowly about the woods, often at a considerable distance from the water. They are so slow and stupid as never to attempt to get out of the way, and seem, therefore, to be soon exterminated where hogs are allowed to range in the woods. I found them far most abundant in the damp spruce forests near the coast, but have also found them everywhere as far east as the summits of the Cascade mountains, where, at a height of over 4,000 feet above the sea, I obtained the first full grown specimen met with, on August 5, 1853. This one, as if to verify the popular fable of the salamander, was caught while leisurely crawling through the ashes of our camp fire, no doubt driven out of the ground by the heat. I have met with this animal crawling about in January and February, but in severe weather it hybernates in the mud at the bottom of ponds, where, if shallow, it sometimes is killed by freezing, as I have found a large number dead in this way. In March and April they seek the water to spawn, and their loud piping may then be heard at night, everywhere, though they are silent at other seasons. In May their spawn is found attached to twigs in the water, after which time they seek the land again. I found young ones about two inches long in July, which were entirely aquatic, and had external branchiae or gills, but in color were exactly like the adult animal. When in the water this is a very

active animal, and has a greater expansion of the thin membrane of its tail than during its terrestrial life.

The spawn mentioned as deposited by this species in the water may have belonged to some other animal, as most salamanders are believed to deposit it on land, under stones, &c.; but I never found any in such situations.

NOTE.—Both Mr. Gibbs and myself found near Steilacoom a small kind of salamander under logs and stones, which seems to be undescribed. The specimens were, in some way, lost or destroyed. When alive, they were pale purplish, with yellow longitudinal stripes.—C.

Among the lost collections from the Dalles was a small salamander, found in January, 1855, which had the sides deep blue, with light markings; belly spotted with black. No such species is known to naturalists.—S.

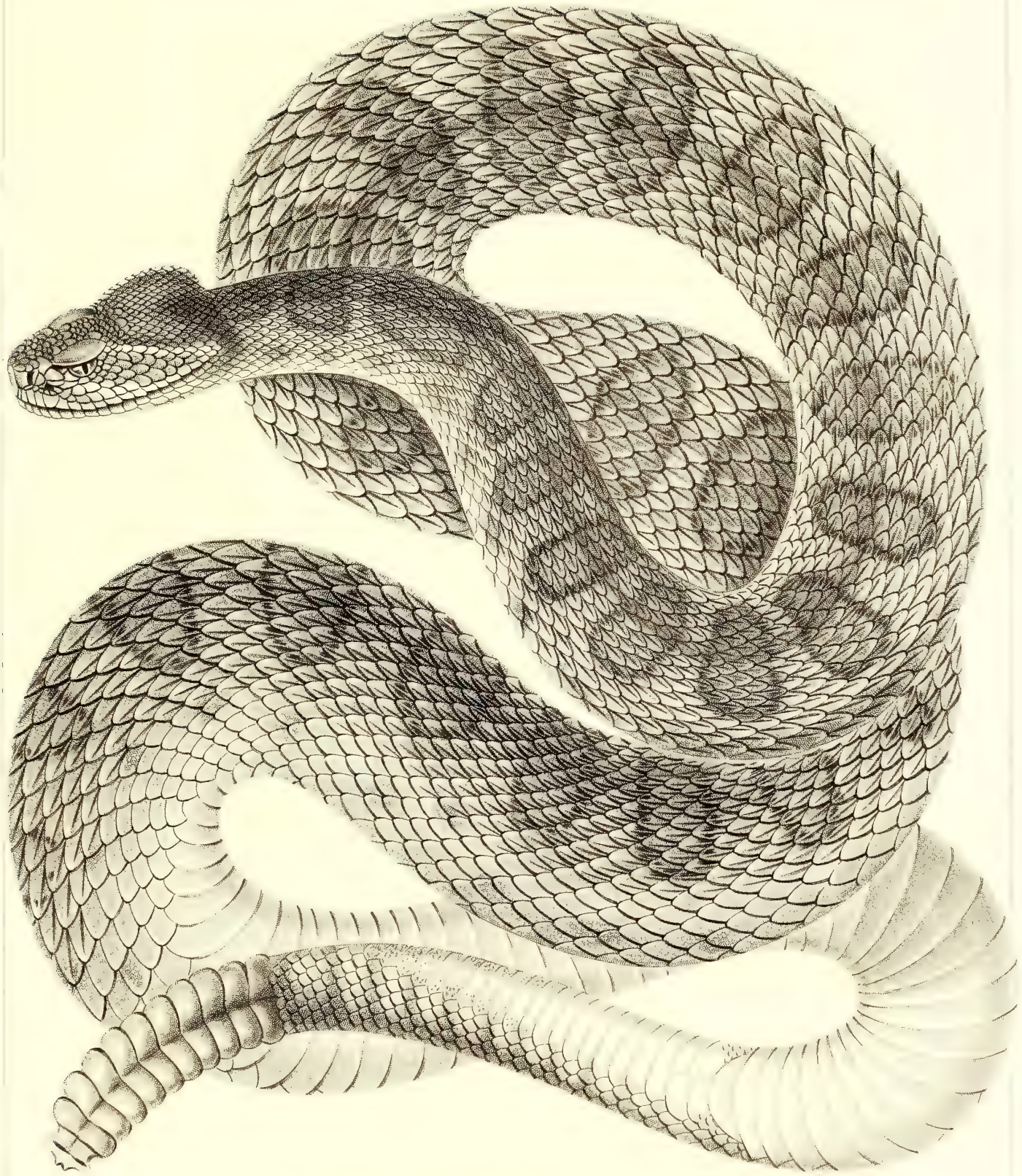
SIREDON LICHENOIDES,? Baird.

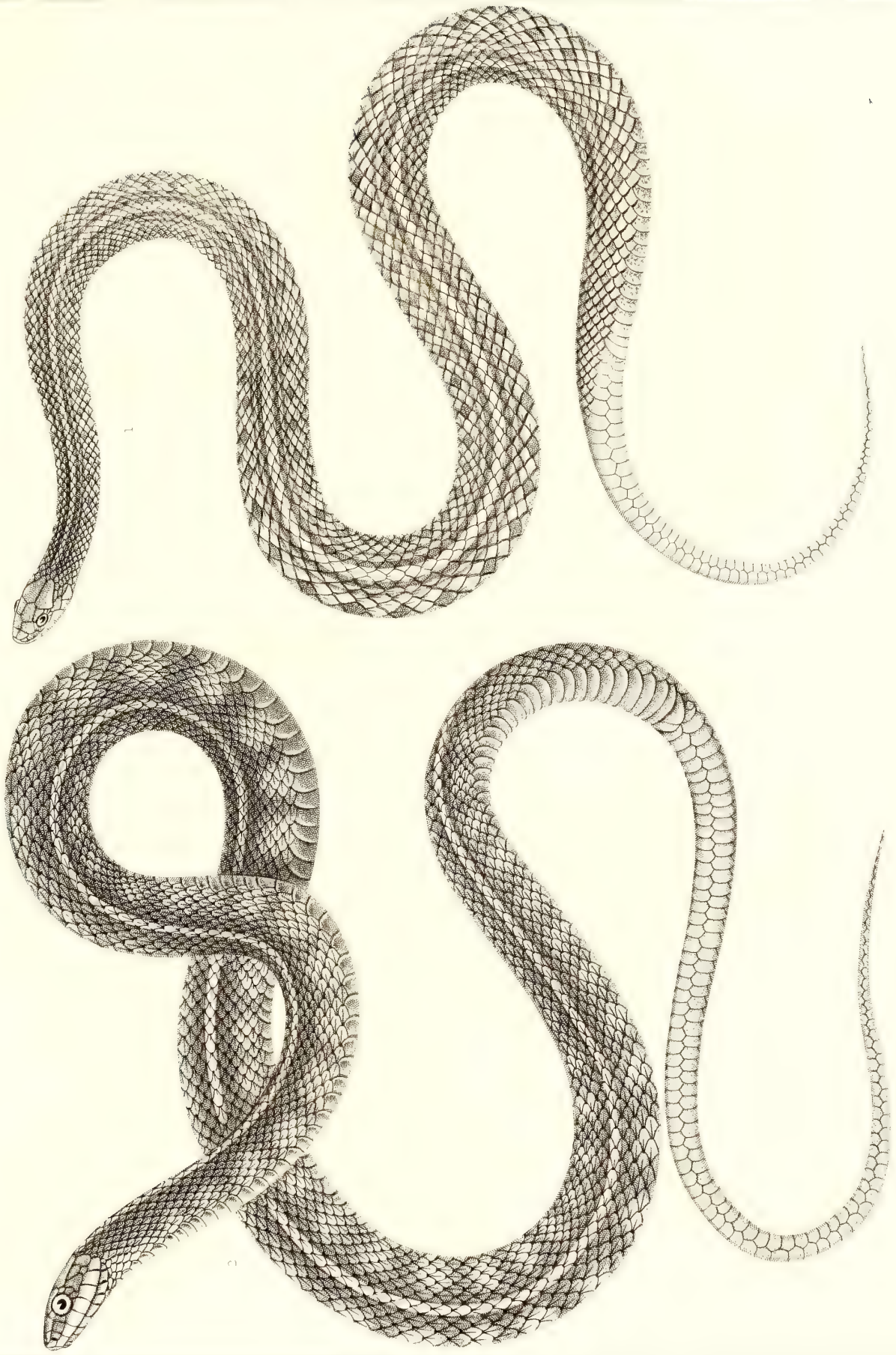
"Ground Puppy;" "Four-legged Fish."

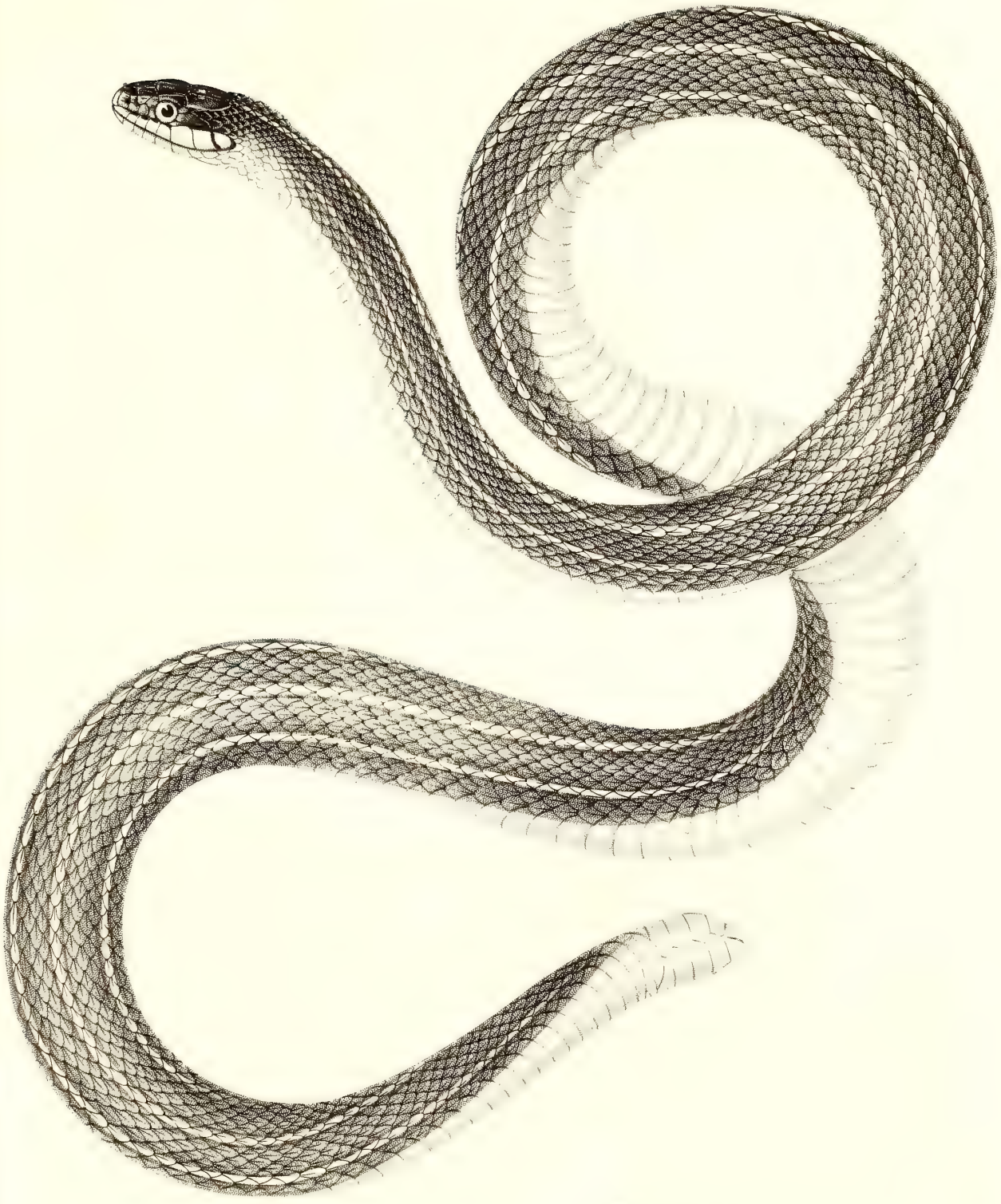
Siredon lichenoides,? BAIRD, Stansb. Salt Lake Exp. 1852, p. 336, pl. 1.

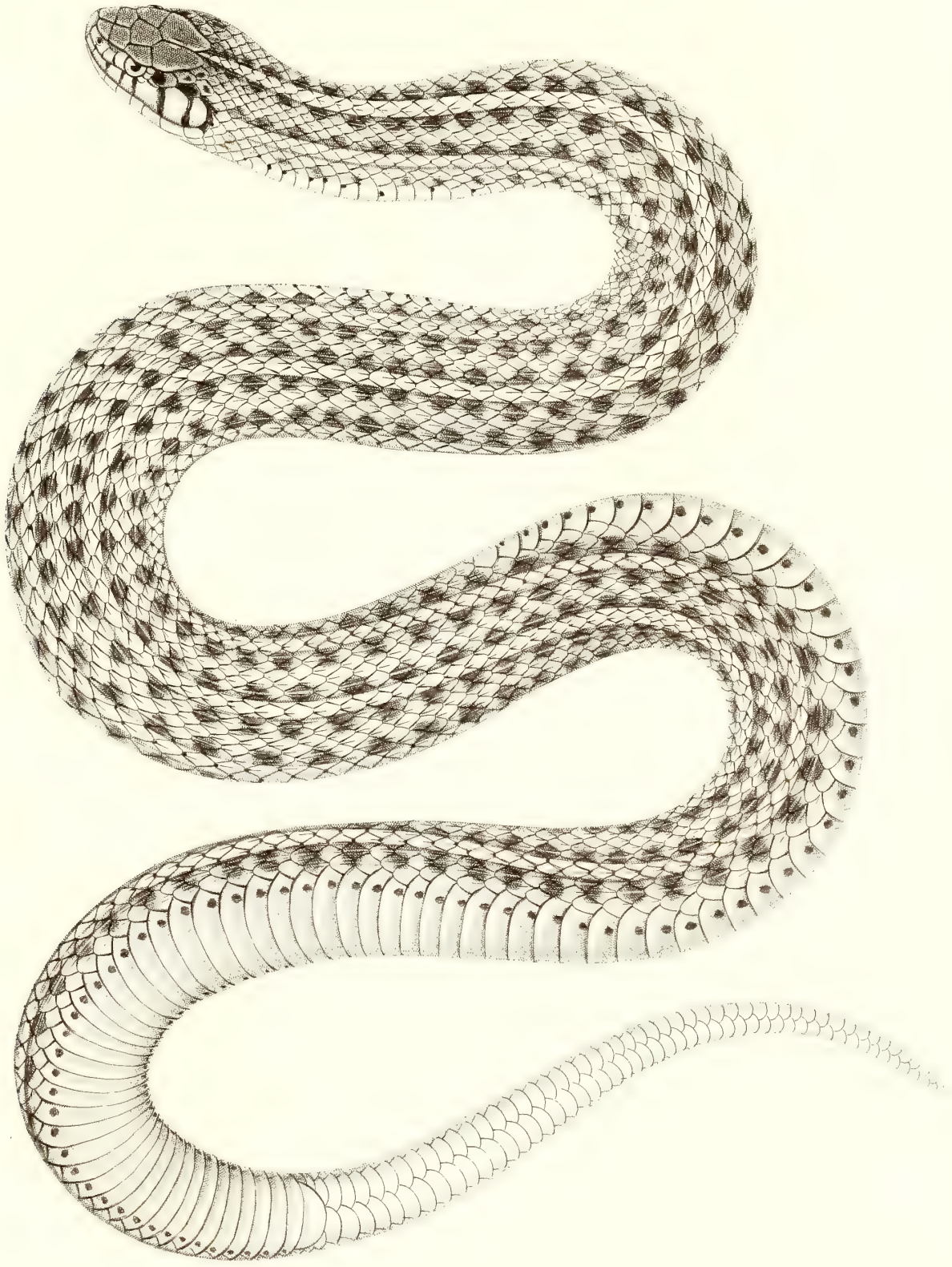
A specimen of siredon collected by Dr. Suckley, near Fort Union, Nebraska, differs from the typical *S. lichenoides*, in fuller form, and in the presence of distinct rounded black spots on a grayish brown ground, the spots larger and more distinct than in *S. mexicanus;* the eyes are more anterior. In the absence of tangible, distinctive characters, it is difficult to say if this animal be really distinct from *lichenoides;* but it may, at any rate, be considered as a well marked variety, *S. melanosticta.* The total length of the specimen, No. 4073, is about nine inches.—BAIRD.

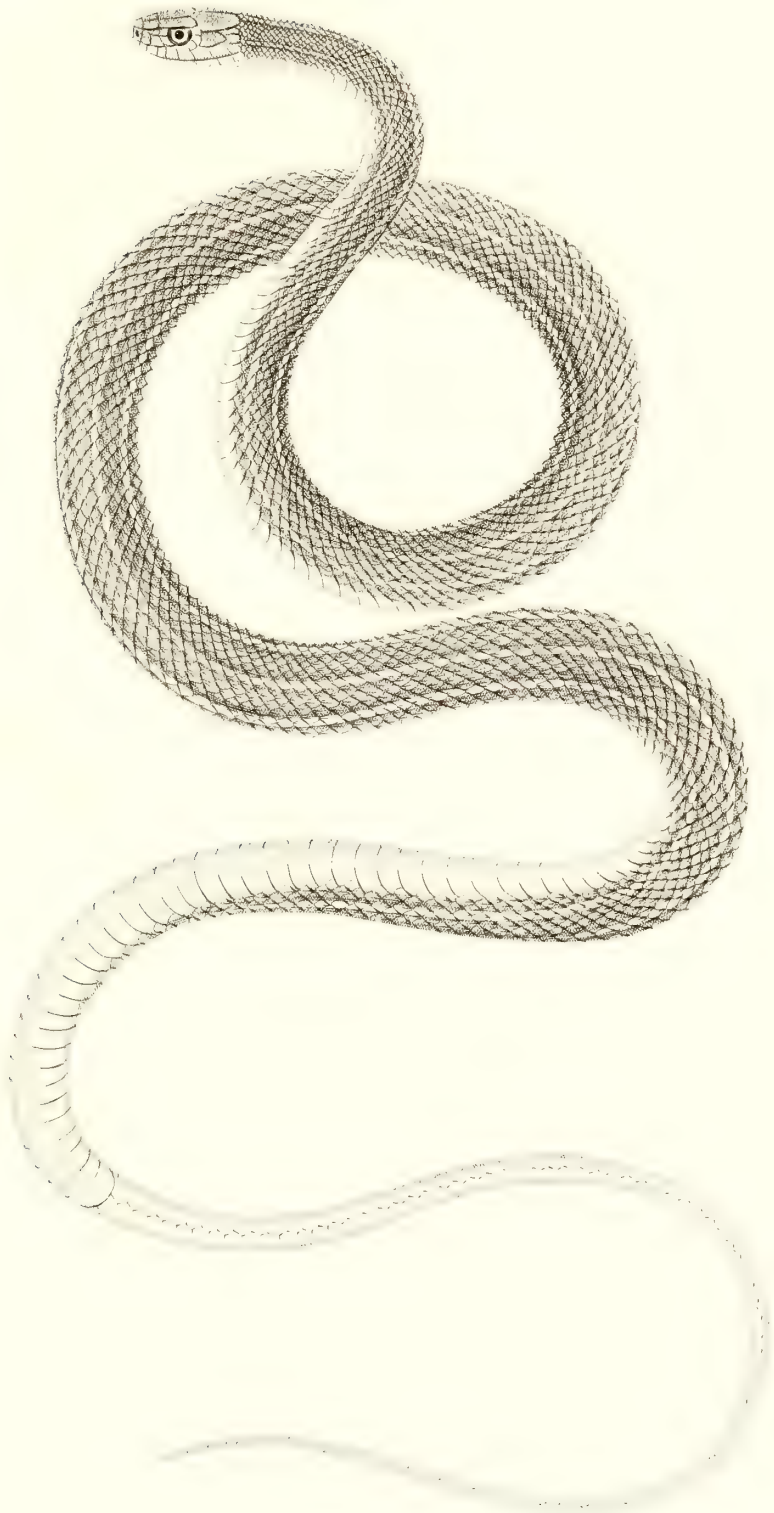
This siredon was obtained on the route between Fort Union and Fort Benton, Nebraska. Vast numbers of a species apparently identical are found in the small brackish lakes of central Minnesota, where I procured some thirty or forty specimens, which were, unfortunately, afterwards lost on their way to Washington city. The species is, apparently, permanently aquatic; the only occasion upon which I noticed them out of their native ponds was when, during a terrific thunder shower, I found many in the wet grass within a few feet of a small prairie lake, to which they had retreated from the water, apparently from fright produced by the loud claps of thunder. I generally obtained them by dragging a seine through the small, shallow, muddy ponds, so numerous in that region. The contents of my net were generally confined to those animals, and vast numbers of aquatic insects.—S.

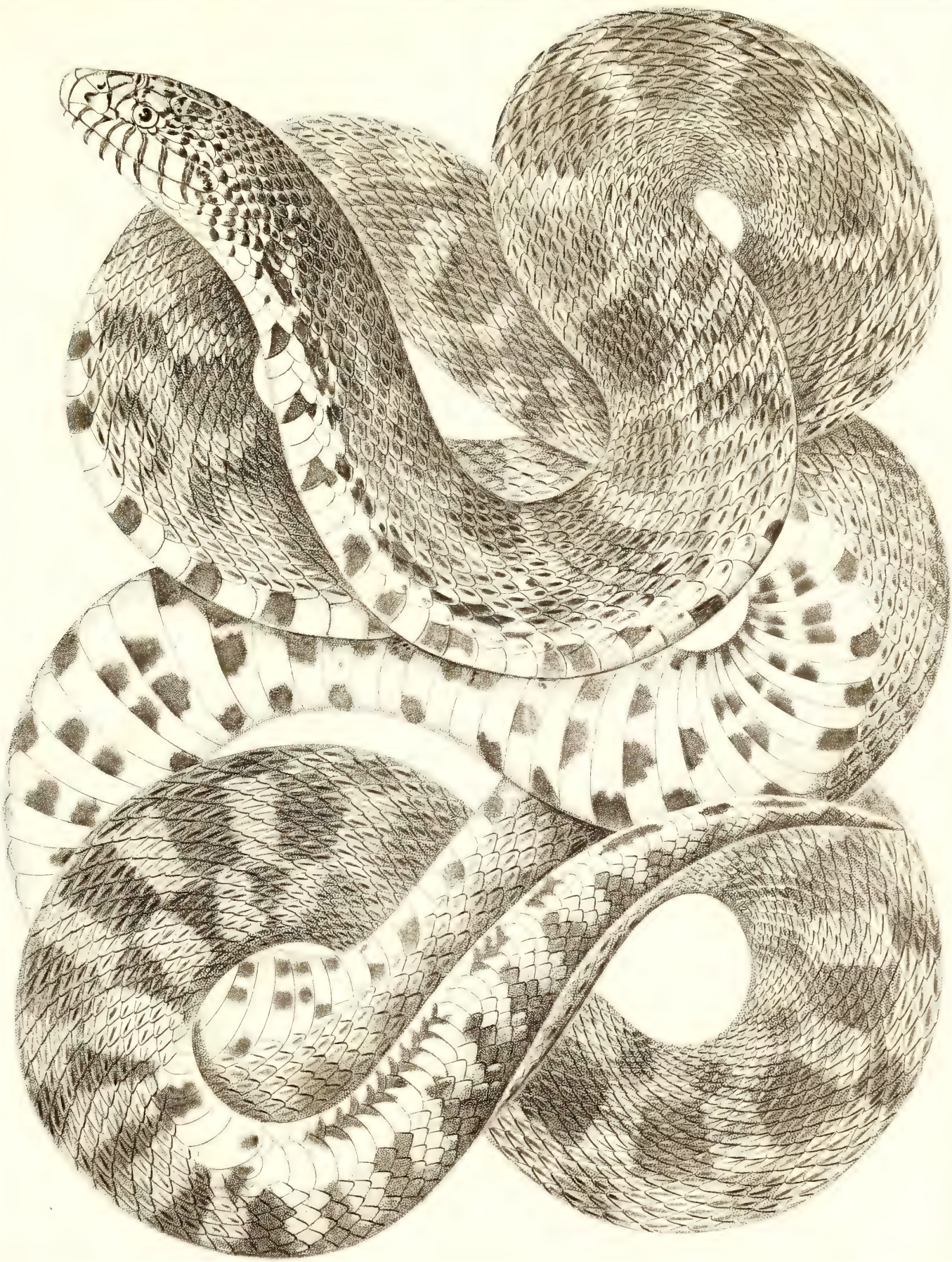


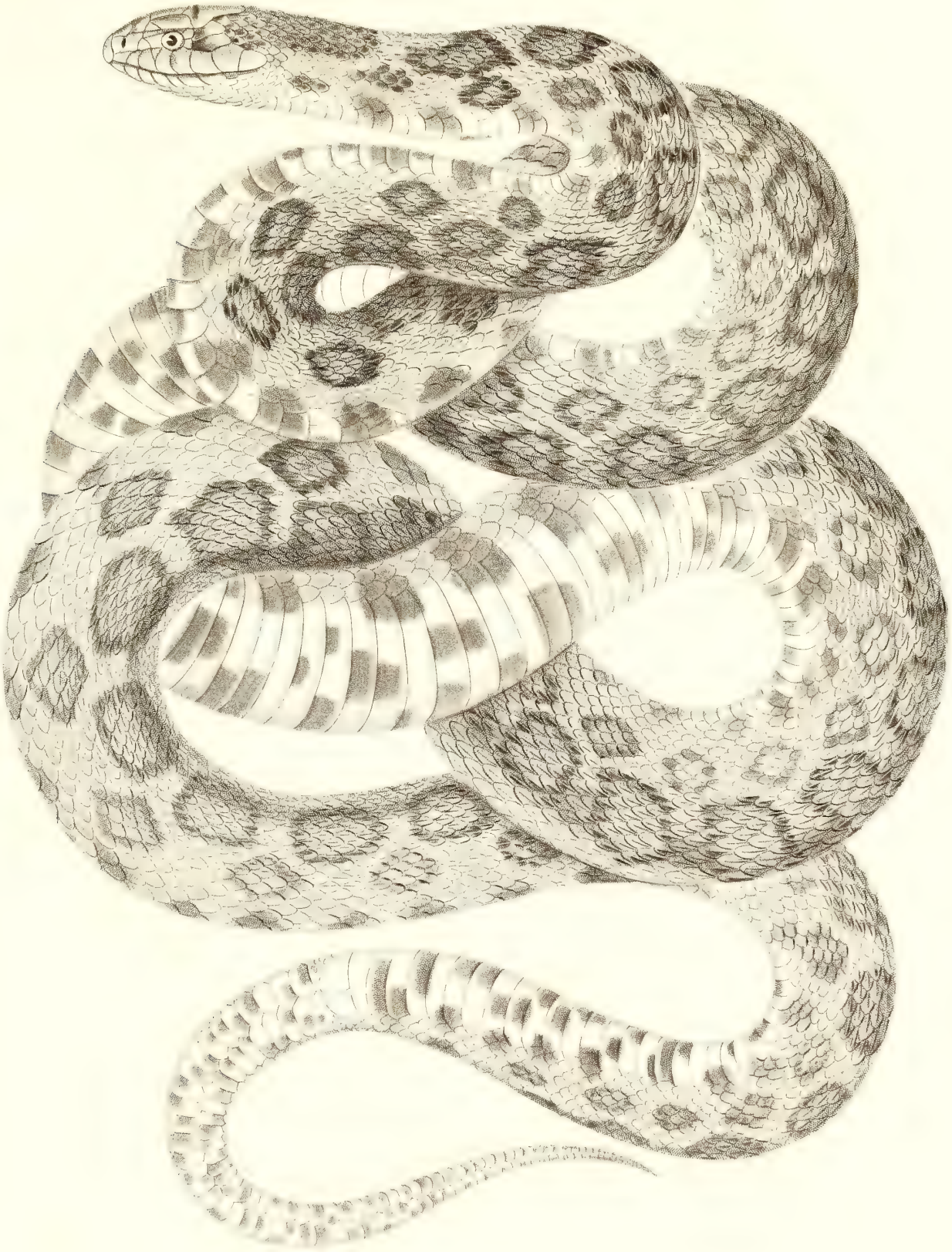


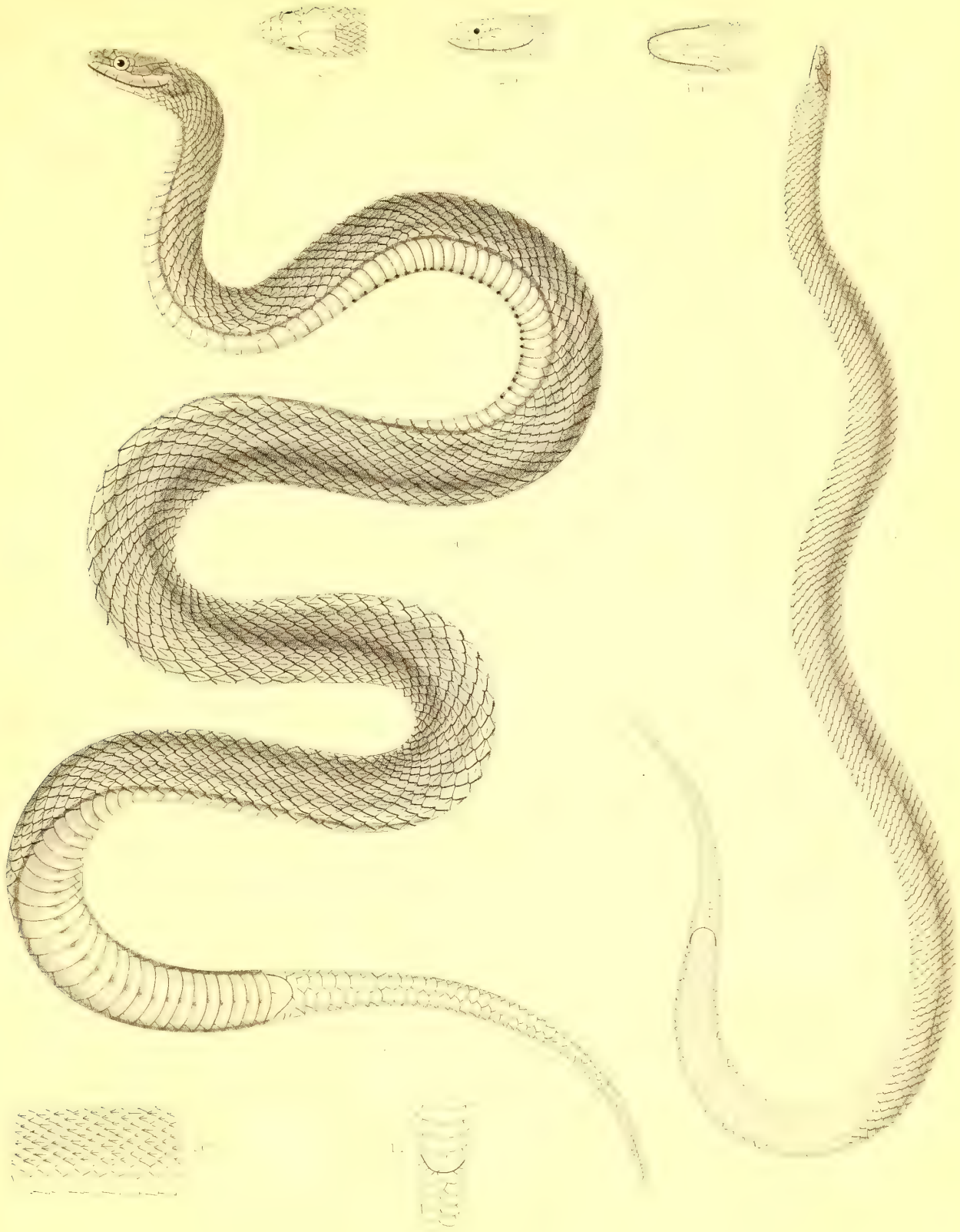




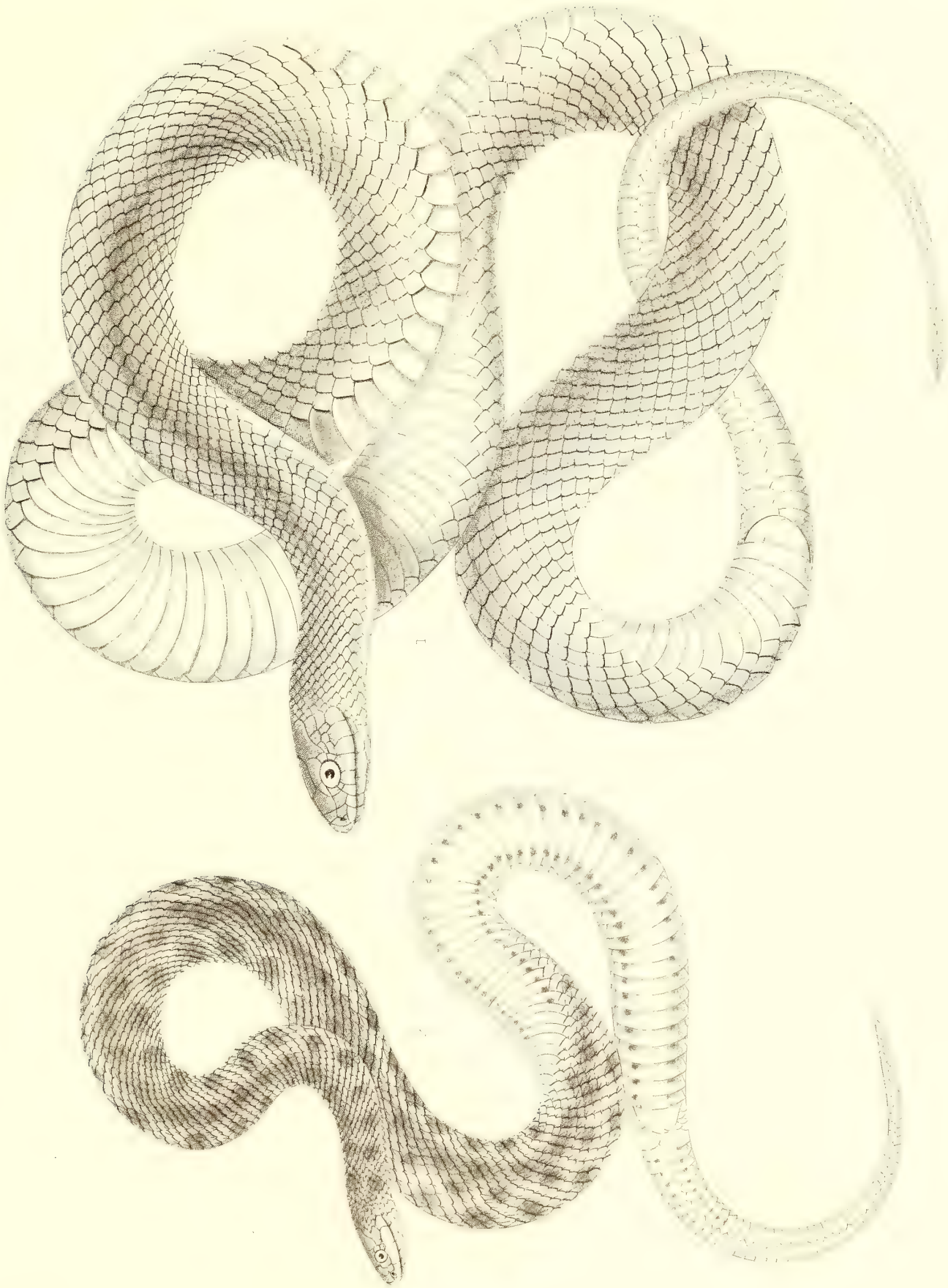


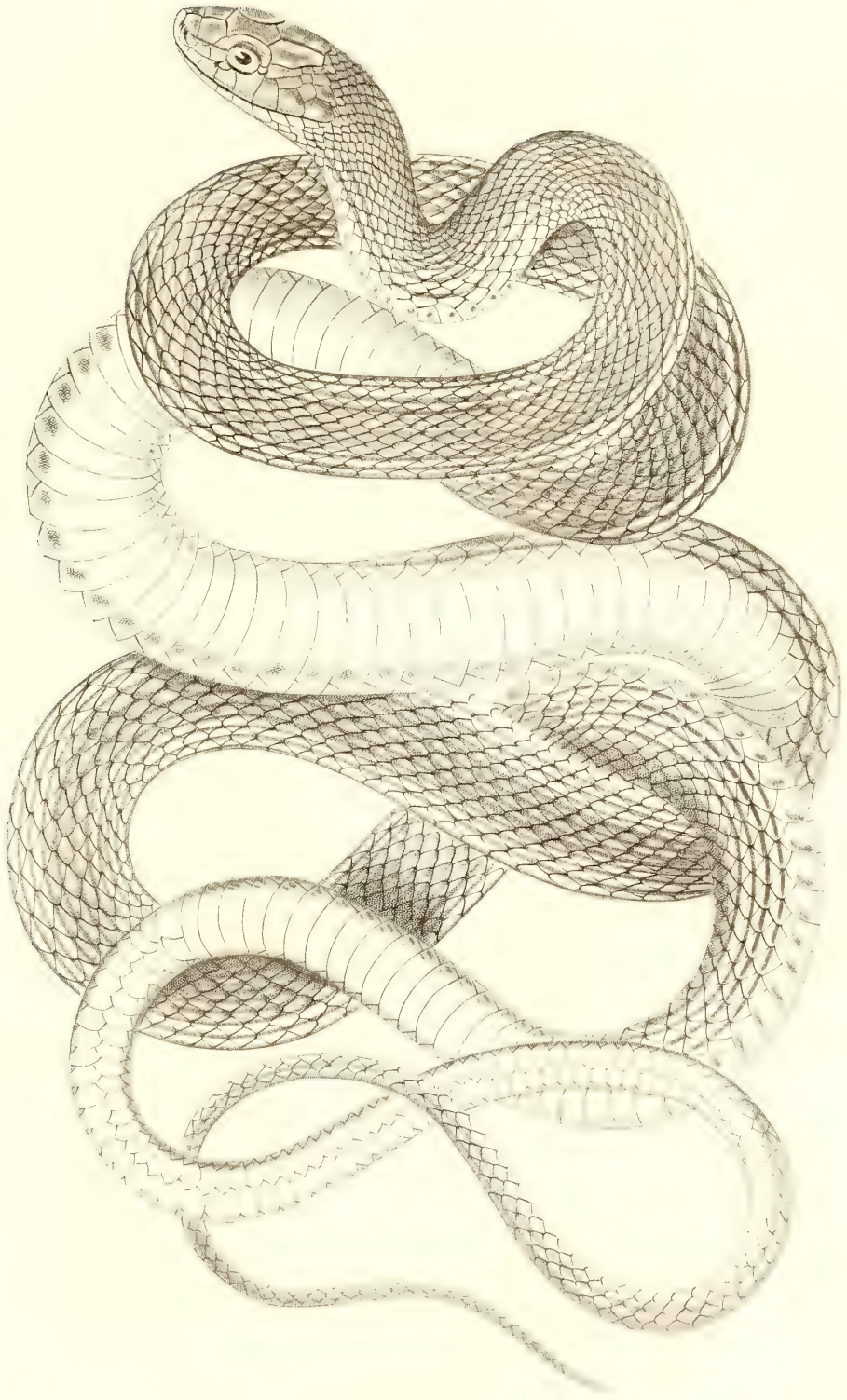




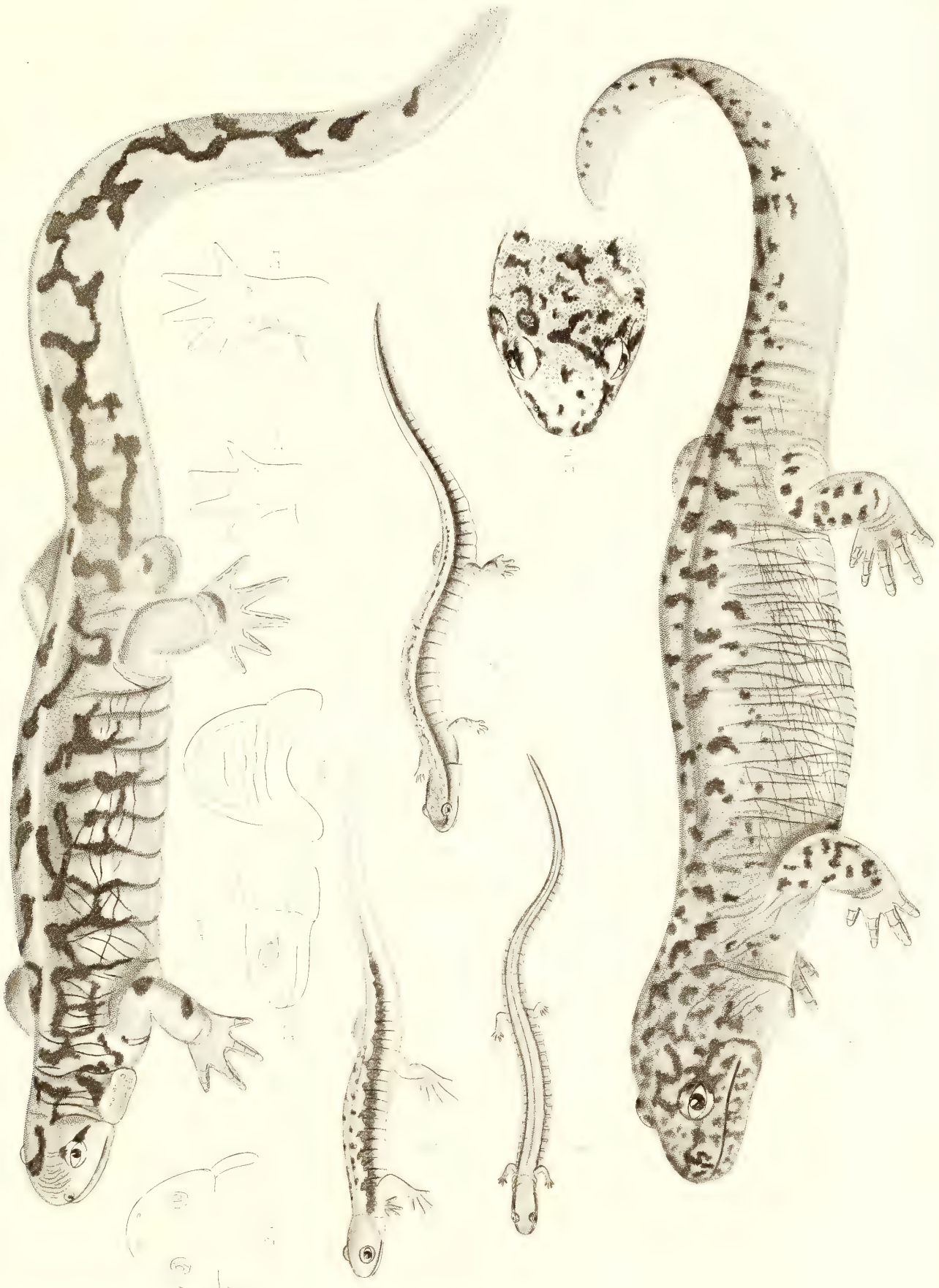


J.H.Richard, del





J. H. Prichard del.



H.Pickard del

No. 5.

REPORT UPON THE FISHES COLLECTED ON THE SURVEY.

BY DR. G. SUCKLEY, U. S. A.

CHAPTER I.

REPORT UPON THE SALMONIDAE.

As the *salmon* family holds the strongest position in economical importance among the fishes of the northwest, the first portion of this report is devoted to the consideration of that group. The second division contains brief descriptions and notes of the other kinds of fishes found along the line of the survey. Those obtained east of the Rocky mountains are simply alluded to by the names given in the General Report on Fishes, vol. 10 Pacific Railroad Reports, with reference to the pages in which descriptions more in detail can be found. The fishes obtained from the region west of those mountains have brief scientific descriptions added, in order that they may be readily identified by students or future explorers in those Territories. This was deemed necessary on account of the great confusion existing among settlers regarding the common names applied to the fish, many of which, although widely distinct from each other, are known by the same names to different persons.

The notes and memoranda furnished by Dr. James G. Cooper, surgeon and naturalist to the western division of the survey, have been incorporated over his initials. Credit is given in their appropriate connexions for information derived from other persons.

The fisheries of Washington Territory will, at an early day, be considered of great importance to our commerce. The various kinds of salmon form the bulk of the valuable fishes there found, but there are, in addition, many others which, although not so numerous, are yet abundant and of fair relative commercial value. Among these are the *cod*, found in moderate quantity in Puget Sound, and said to be very abundant on a deep bar or bank, off the mouth of the Straits of Fuca; the *halibut*, found in the same situations; the *eulachon*, a very delicious fish, in some years coming in great shoals in the bays of the lower part of Puget Sound, and along the coast near the mouth of Frazer's river; the *herring*, arriving in vast quantities in the same waters at regular periods, besides a vast number of good table fish, such as sole, flounders, the so-called "rock-cod," viviparous perch, &c., &c., which, although not valuable for trade, are useful additions to the fare of the inhabitants.*

Several points on the Columbia river are most excellent locations for the taking of salmon and the establishment of "packing" houses. These are generally at the greater falls and rapids. The best fish are there taken in the spring and early summer months. Salmon of

* A trade in oysters has long been carried on between Shoalwater bay and San Francisco, and will, if properly conducted, undoubtedly prove profitable.

different kinds are taken at other seasons. The species of salmon which is principally used for salting in Puget Sound is the *Skowitz*, an autumnal visitor. Of these, Messrs. Riley & Swan, proprietors of the salmon packing establishment at the mouth of the Puyallup river, have taken 3,000 at one haul of a seine! The average weight of the species cannot be said to exceed twelve pounds, and is perhaps not greater than eight or ten. This size is very convenient for packing.

This subject is more fully discussed in the pages devoted to the special consideration of the *Salmonidae*.

1. *Descriptions and history of the various species of fish belonging to the salmon family, found in the waters of Oregon and Washington Territories.*

GENERAL REMARKS.—In the preparation of the following pages it has been attempted to collate from various sources all the useful facts known concerning the natural history and economic value of those species of the salmon group existing in the waters of our extreme northwestern Territories. Considerable additional information concerning the species recently described, rawn from the accounts of explorers, settlers, Indians, and others, has also been embodied.

In the scientific determination of the different species, we have been fully aware of the difficulties and perplexities that surround the subject, and accordingly do not flatter ourselves that perfection has been arrived at, but simply offer the report as a stepping-stone to future knowledge.

Owing to the paucity of the material at present furnished by the specimens of this particular group contained in the national collection, the arrangement of different species of the family under the special generic divisions *Fario* and *Salar* has not been adhered to, but all the species have been temporarily retained under the genus *Salmo*. To separate the species we have into *genera*, from the distinctions afforded by the number and arrangement of the vomerine teeth and other anatomical characteristics, under the present circumstances, would be rash, and the classification thus furnished unreliable.

It is hoped that at some future day, when the different kinds are better known and have been more thoroughly studied, that a *sound* classification may be founded on the anatomical characters of *healthy*, *fresh-run adults*. Too much confusion has been occasioned already by the description of new species founded on *immature*, *ill-conditioned*, or *abnormal* specimens, and by new genera and sub-genera based on the arrangement of such diverse and unsound material.

Quite abundant as far south as San Francisco, we find these fish, as we proceed north, increasing in species and in numbers, until, in arriving at the Columbia river, and at the rivers near Vancouver's Island or the streams falling into Puget Sound, they form one of the most striking wonders of the region. There vast numbers of these fish, differing in anatomical peculiarities, species, and color, and changing much with age, sex, and condition, season of the year, or quality of the water, astonish by their number, and confuse with their variety.

From the vague and ill-determined characters separating the different species of *Salmonidae*, many of which, although obviously distinct from each other, yet approach in so many characters disagreeing only in shade and intensity, it is found extremely difficult to give a concise and striking summary of the leading characters of certain species, so that, by reading a short synopsis, an ordinary observer may readily define the position of a particular specimen. When, in addition to the difficulties found in identifying good typical specimens of the *healthy*, *fresh-run adults*, are added the perplexities caused by changes in age, sex, and condition, "confusion

becomes the worse confounded," and the naturalist is almost inclined to give up in despair the task of unravelling the tangled and confused relations of the species composing the group. To meet successfully these unfortunate obstacles to a clear exposition of the history of this branch of the animal kingdom, especially as it exists on our Pacific coast, will yet require years of patient labor and investigation.

In preparing this report we have been guided to a great extent by the able work of Sir John Richardson, contained in the pages of his *Fauna Borealê Americana*, and by the notes of Dr. Gairdner published therein. For great assistance we are also indebted to the writings of Dr. Charles Girard and J. Carson Brevoort, esq., as well as for the friendly services of both gentlemen. Valuable manuscript notes have been furnished by Dr. James G. Cooper, George Gibbs, esq., and Dr. C. B. Kennerly. The three gentlemen last named have spent much time in the northwest, engaged for the most part in scientific researches. During my own residence in Oregon and Washington Territories I endeavored to obtain reliable information regarding this group of fishes; but as I was engaged in many other pursuits, the data collected were not nearly so complete as desired.* Since I returned to the Atlantic, Mr. Gibbs has very kindly furnished me additional notes of his own, besides valuable memoranda communicated to him by Mr. John Swan, of the Puyallup salmon fishery, (Puget Sound,) and by Angus McDonald, esq., the officer in charge of the honorable Hudson Bay Company's trading post, Fort Colville.

It would be highly desirable to trace out the connexions existing between the *Salmonidae* of our Pacific coast and those of Russian Asia and Japan. Descriptions of many of these are contained in Pallas' Zoographia Rosso-Asiatica, some of which have been alluded to while treating on particular species in the earlier portion of this report.

The *anadromous* salmon and trouts (those running up from the sea) are not found in Oregon or Washington Territories above the great falls of the Clark's river, or on Snake river, (Lewis's Fork of the Columbia,) above similar falls. The obstruction on Clark's river is about 200 miles above its mouth; those of the Snake, some 275 miles above the Columbia. Concerning their ascent of the Snake, Mr. George Gibbs communicates the following: "In some of the branches of the Columbia salmon penetrate to the Rocky mountains, but they cannot ascend the Snake above Rock creek, between Fort Boisé and Fort Hall, where the great Shoshonee falls stop them. Above this point there are fine trout. Fort Boisé is a great fishing ground for the Bannacks and other bands of the Shoshonee or Snake tribe, who would be famished if kept away from that place during the fishing season. We found them taking salmon in vast numbers at the end of August, 1849."

In 1854 I visited Fort Boisé *myself*, finding salmon exceedingly abundant in September and October. They were then spawning, and seemed almost to fill the water in places suitable for that purpose. The species, I presume, were principally the *S. quinnat* and *S. gairdneri*, but as to this I am uncertain, as at that time I had not commenced to pay especial attention to the subject.

On the Columbia the best salmon are generally those which enter the river during the spring and early summer months. These are the "common silver salmon," (*S. quinnat*,) square-tailed salmon, (?*S. gairdneri*,) and *white salmon*, (perhaps the *S. tsuppitch*,) besides several other species, such as the *S. paucidens*, &c., &c., which are simply considered by the unscientific as *small individuals* of the kinds named. The autumn and winter kinds are much inferior in flavor

* Several valuable consignments of specimens of these fish, sent by me from Puget Sound and the Columbia river, were lost *en route* to Washington city.

or richness, and consequently in market value. They include the "hook-nosed" species, besides the emaciated "spring salmon," and others of more or less excellence, yet scarcely any are found at that season equalling the fine kinds of spring. In this connexion, Mr. Gibbs makes the following remarks: "The spring salmon of the Columbia reach a great size, forty pounds being not an unusual weight for them to attain, and I have heard of some reaching seventy. They are excessively fat when they first enter the river, and make much better eating than when caught further up. 'Chinook' salmon bring the highest price.

"In the autumn the white fleshed or *masachee* salmon, as they are often called, arrive. It is observed that the spring kinds do *not* run up the small streams near the coast, but *keep up the great rivers.* At the season of the annual freshet (in June) they overcome the falls of the Columbia, and as it backs up the Willamette, they mount the falls at Oregon City also. The autumnal salmon, on the contrary, run into *all the small creeks*, and even into *ponds* formed by the rains on the prairies. The *spring salmon* enter but few of the rivers on the coast, and only those either of considerable size, or coming from *snow mountains.* Both the spring and winter kinds run up the Klamath and Sacramento rivers in vast numbers."

He adds: "There is a salmon that runs up the Quinaiutl (a river heading in a lake in the Olympic range, and emptying into the ocean just above Point Grenville, between Gray's Harbor and Cape Flattery) which is said to be a different species, *small*, but VERY *fine.* The Indians brought us two about the 20th of February—much earlier than the other salmon enter the Columbia—but they were dressed and partly dried, so that I had no good opportunity of examing them."*

In 1853 and 1854 large quantities of salmon were salted for market at the fisheries near the mouth of the Columbia, and at the Cascades, about 150 miles above. Although the fish, being those taken in spring and summer, were of the finest quality, second to none in the world, [I say this understandingly, having eaten excellent salmon in Great Britain and on the continent of Europe, as well as those brought to the New York markets from Nova Scotia,] owing to carelessness in packing, and to the expense and difficulty that then attended the procurement of proper barrels and good salt, nearly all who went into the business lost money; and the salmon thus miserably preserved reached the markets of San Francisco and New York in such bad condition that they obtained a bad reputation among dealers. I am convinced that should the business be undertaken properly by men *skilled in the business*, who, with ordinary care and a selection of none but the silvery spring salmon (*S. quinnat*, *S. gairdneri*, and *S. paucidens*) on the Columbia, and the schedadhoo, skwowl, and satsup, or those known to the Indians as *tyee* salmon, on Puget Sound, it will be found highly profitable, and that salmon thus preserved would in a very short time be in great demand in all the principal markets of the world.

To attain this result great care in packing would be necessary, and a rigid determination to salt none of the autumnal or inferior kinds, a temptation to which many have succumbed, owing to the cheapness and abundance of such indifferent material. The skowitz (or *S. scouleri*) may be an exception to the rule regarding autumnal salmon; yet even when in its best condition it is a second-rate fish compared to the others. Of this salmon Mr. Gibbs says: "Messrs. Riley & Swan, the proprietors of the Puyallup fishery, on Puget Sound, consider the skowitz (skokwid) a good fish for curing, because they are of so fit a size, *being not too large.* They put up 800 barrels in six weeks, and were the first persons on the sound to use the *seine* in capturing

* It is possible that this kind may be the species described by Girard as the *Salmo* (Fario) *aurora*.—(See Gen. Rep., p. 308.)

salmon. The Indians take them in weirs and by spearing. In curing, the salmon *shrinks one-half in bulk*. This shrinking should take place in the 'striking tubs' before packing, that they may keep solid."*

The salmon of Puget Sound and its affluents are probably not all precisely identical with those of the Columbia, although for the most part the species are the same. Puget Sound is an arm of the sea running into the land through a gap, called the Straits of Fuca, lying between the south end of Vancouver's Island, and the shores of Washington Territory. It extends to a point some two hundred miles in the interior, and notwithstanding the number of fresh mountain streams which empty into it, is apparently as salt at its head as the waters of the ocean itself. There are many islands in the sound, and, as a consequence, there are numerous narrow crooked passages, so that the whole, when stretched on a map, looks like a cunningly-contrived aqueous labyrinth. The streams which empty into the sound for the most part arise in the snow ranges on either side. The principal of these are the Nisqually, Puyallup, Dwamish, and Snohomish rivers, and adjoining Puget Sound—forming part of the same water system in Bellingham bay and the Gulf of Georgia—we have the Lummi river emptying. All these streams are rapid and cold, and, considering the amount of water which flows through them, short of extent, the dividing ridges of the mountains being generally not more than sixty or seventy miles in a direct line from the sound.

Puget Sound *proper* has scarcely any rock bottom, and but two or three reefs. Near Bellingham bay, and along the north side of the straits, many rock islands occur. Along the shores are many sandspits partially surrounding shallow bays, in which vast number, of young salmonidae feed and live, and where for a short time before the season of entering the rivers the adult individuals of each kind may be found. It is in these situations that most of the good salmon taken by the Indians during the cold months are caught. Although salmon have been as yet unknown to take bait or the *fly* after entering the rivers of that region, they nevertheless are caught in the *salt bays* in large numbers by the natives. The following plan is pursued: A small herring, four or five inches long, is tied to a hook. Some six or eight feet from the bait a small round stone is fastened to the line. The stone acts as a "sinker," keeping the bait sunk some six or eight feet below the surface while being "trolled." The Indian in a light canoe paddles about slowly and noiselessly, trolling the line with a jerking motion, and not unfrequently taking in the course of a couple of hours several handsome fish, weighing from ten to thirty pounds each. The time chosen for this business is generally the two hours succeeding day break and an hour or two towards evening.

Besides the species contained in the list given, there are probably several salmon and trout, occurring in the Oregon fauna, which have as yet been undescribed. Some of those known may have been formerly described by Russian naturalists, as already stated. To one unaccustomed to the variations in appearance caused by age, sex, and condition, in individuals even of the same species, the proper classification of the northwest salmonidæ may not seem a difficult subject. But practically—and we hope that we may be pardoned for again reiterating previous remarks—the reverse is the case. Added to alterations in color, according to different stages of exhaustion, which are as great as those which have rendered the dying dolphin noted, we have alterations in contour and a difference in the anatomical appearance of the jaws and

* After going through the "striking tubs" I am told that the salmon should be forced into the barrels by a press or screw, so that the fish which are piled up to a point one third higher than the depth of the barrel shall be forced in by the barrel "head," which is pushed down by the screw. Thus closely packed, there is no danger of their "working" and becoming disorganized by the motion of a vessel at sea.

teeth,* which occur so rapidly in the same individual that the novice might readily be pardoned for supposing—Rafinesque-like—an indefinite series of new genera and species.

The idea that most of the species now recognized are simply varieties of one or two kinds is equally preposterous, as shown by making careful anatomical comparisons between individuals of different species, thus showing *constant distinctions* when compared at corresponding seasons. In some species the "hooked-snout" is peculiar to the *males* when fresh-run and in good order. In others this feature is only recognized as a mark of exhaustion or of age, and occurs in both sexes. Alterations in color have been frequently spoken of in this report. Some idea may be gained of these by examining Agassiz's plates of similar changes in the European *S. salar*. Besides the differences *in the changes* noticed between one species and another, are those between *the two sexes of the same species*. This, in the case of the salmon seen by me spawning in Burnt river, was very well marked.—(See beyond.) In describing the colors of a species under the head of *specific characters*, none but those of the "fresh-run" adult should be entered. Additional confusion in our books has been produced by the carelessness of explorers in this respect. An example of this appears to be in the colors assigned to *salmo Clarkii* by Dr. Gairdner; but, as they have evidently been described from an exhausted fish, or one at least partially so, I confess my inability to identify the species with certainty.—(See remarks under the head of *Salmo clarkii*.)

Several of the autumnal salmon are of a dingy color, even when in good order and fresh from the sea. Their flesh is light colored and of poor flavor, and some are so rank as to be positively disagreeable. If ever silvery, it must be when in the sea, long before instinct has sent them to the rivers to attend to their reproductive duties. If that is the case, it would seem that the change in color is as much owing to a disturbed condition of the system, produced by sexual commotion, as to emaciation and fatigue.

All species—the *trout* less so than the others—go through these changes of color after remaining a short time in fresh water; the changes being most noticeable as the fish is becoming rapidly exhausted. The bright silvery species lose their glistening appearance, the blue and lead colors of the back become green or dingy olive, and the silvery white of the sides and belly blotched with patches of dark olive, alternating with purplish maculations.

These purplish discolorations, or rather colorations, frequently change into deep *red*, and sometimes into *lake*, the fins especially showing the *red*. It might seem that this intermixture of red would indicate an activity of the circulation. This is not the case, but seems to be the result of a stagnation of the blood in the superficial capillaries, and another evidence of the broken down scorbutic condition of the impoverished fish.†

The salmon are said not to eat after their entrance into fresh water; notwithstanding this, they have to undergo the exhaustion consequent upon their exertions in ascending the rivers, jumping water-falls, and stemming currents, which, superadded to the debility necessarily produced by the process of spawning, sufficiently accounts for their impoverished condition during and after spawning season. Indeed, hosts upon hosts do not survive, but die after completing their instinctive duty, and often before. Some of the shores of the small lakes and tributaries of the Columbia are said to be lined with the dead and dying fish in autumn. Salmon that enter the Columbia ascend the principal river as high as the lakes on its course

* The wasting of the flesh and consequent absorption of the fat of the fish, causes the gums to shrink from the teeth and the nose to assumed a hooked form. The teeth thus exposed look much larger than before.

† See remarks under the head of *S. paucidens*.

through the British Possessions; but short of those points vast numbers turn off into its numerous tributaries, the Yakima, Snake, Okanagan, and other rivers. During the course of an expedition against the Snake Indians, in 1854, the writer saw vast numbers of salmon in the small tributaries of the Snake, Boisé, Powder, Burnt, Peyette's, and other rivers, at points nearly 250 miles from the mouth of Snake river, and about 650 from the Pacific ocean. This was in September and October, when the fish were all engaged in spawning. Passing by the multitudes and multitudes of these fish, sufficiently in this repect worthy of wonder, we shall proceed to describe the act of spawning as witnessed at Burnt river on the southern slope of the Blue mountains of Oregon. Camping at a point where the stream was tortuous, and its waters clear and rapid, we saw a female salmon, some two and a half feet in length, dart rapidly down stream, to a spot abreast of where we were standing on the bank at the head of a rapid. She turned suddenly about, resting with her head towards the current, which was rather strong. Upon locking closely we observed that she was over her spawning bed, a peculiar looking cup-shaped depression, of about three feet in diameter, in the bed of the stream. This had evidently been produced by the lashing of the tail and fins. The fish remained stationery over the "bed" about half a minute, keeping herself from being forced down with the current by gentle motion of the fins, and during her stay apparently discharging a few ova, some of which were probably washed down the rapid, the rest falling into their proper receptacle. She then suddenly darted up stream to a quiet resting place. Immediately upon her departure *several* males took her place over the "bed," and remained there about the same length of time; they in turn retreated to a place of repose, the spawning "bed" being quickly again occupied by one or more females, followed by males as before; the same bed thus serving for about half a dozen individuals of both sexes. The *period of repose* seemed to be about two or three minutes for each individual.

It was pleasing to witness the regularity with which males and females succeeded each other, and also the spirit of combination which they manifested by depositing spawn and milt so frequently in couples, each sex by itself, and each sex retiring to a *resting place* while its opposite was engaged in his or her particular duty. The water on the spawning ground was about three feet deep. The females were invariably the largest, their lengths being between two and three feet. They also, as seen through the water, showed much of the red and purple congestion of the skin and fins, already spoken of as a condition of exhaustion. The males scarcely exceeded 20 inches in length, and were of a pale olive-gray color, very uniform with each other, and scarcely, if at all, showing any red. Thus we see that this particular species of salmon, at least, carries on the reproductive process by companies, and that both males and females in alternating with each other in their duties seem to be impelled by fixed laws and habits of custom or instinct. It was also interesting to see how they retreated after each emission of spawn or ova to *quiet* places of the stream, where, totally at rest, they could rapidly recuperate their energies for the next endeavor. We supposed that the species were the same as those that arrive at the great falls of the Columbia at the Dalles in such vast quantities in April, May, and June.

Angus McDonald, esq., for many years the officer in charge of the Hudson Bay trading post, Fort Colville, (situated at the Kettle Falls, on the Columbia river, but a short distance below the mouth of Clark's Fork,) furnished the following notes on the Salmonidæ of the upper Columbia. The remarks were dated Fort Colville, September 1, 1854, and were kindly communicated by George Gibbs, esq.:

The salmon, as seen at that place, are as follows:

"1. *Seemetleek* arrives at Colville about the 1st of June. On its arrival the jaws and nose are *straight*, with teeth scarcely perceptible. When the male and female couple, to discharge the duties of their watery hymen, they, like other couples, begin to grow thin. As their flesh declines the teeth begin to show and the snout to get crooked, whence we call them the *crooked-nosed* salmon. The Seemetleek is the largest of the species, the first to arrive and *to die*.

"2. *Keasoo*, or *Kakasoo*, arrives here about the 1st of October. *Whether fat or lean, it always has a crooked nose.* It is not so large as the *Seemetleek*. We have proof that the *Keasoo* do not all return, because they have been seen and caught in the winter and spring in many of the Columbia's tributaries, *i. e.*, Yakima, Okanagan, and Spokane Forks. They are, on an average, about three feet long, and each male with *one female*, like the *Seemetleek*. The female first spawns in a favorable place. Immediately by her side is her mate, who discharges his masculine fluid upon the eggs, whereupon the industrious couple cover their seed with sand.

"3. *Stzoin* arrives here about the 1st of July. Straight nose *always*, length about two feet, and breeds like the rest. They are not found dead, and are supposed to return to the sea.

"4. *Cha-cha-ool* (the *ch* pronounced gutteral, as in the Gaelic *loch*) arrives with the Seemetleek. It is rather heavier than the Stzoin, marries, breeds, and dies, like the Seemetleek. Whether *all* or only some of these two kinds die is very uncertain. When these fish die from fatigue they are called by the natives *Skee-le-ways*, a word in their language implying the lean, bad condition of the flesh."

NOTE.—The Indians living at Fort Colville speak a dialect of the *Flathead* language, which itself is not a very remote dialect of the *Nisqually*.*

The *Seemetleek* is probably the *S. quinnat*, RICH. The *Cha-cha-ool*, which arrives at Fort Colville in company with the last, corresponds greatly with the description of the *S. gairdneri*, RICH, and but little doubt exists in my mind that they are identical. The *Stzoin* I cannot identify. Perhaps it is the *S. paucidens*, RICH. The *Keasoo* seems to be the *S. scouleri*, RICH.

Fort Colville is situated at the Kettle Falls, about seven hundred miles by water from the ocean. As the *S. scouleri* enter the river near the 1st of September, their progress against the current would seem to be about one hundred miles a week.—S.

Specimens of the following salmon are very much wanted to complete the series in the Smithsonian collection, as well as to settle many doubtful points. For the convenience of those studying in the field, or collecting, the Indian names of those desired are here given:

At the mouth of the Columbia *true* Chinook is generally spoken. The fish from that locality *wanted* are the *Queachts*, *Quannich*, *Ekewan*, and *Tsuppitch*. These names probably hold good at the Dalles, where "Upper Chinook" or Wasco is spoken. Among the Dalles Indians, however, and also among those living at the Cascades and at Fort Vancouver, there are many who speak dialects of the Walla-Walla language, which is entirely different from either the Lower or Upper Chinook. These dialects are usually either *Klikatat*, *Des Chute*, or *Yakima*. Any fish obtained having the following *Yakima* names are also much wanted:

Kah-lo, (perhaps the *Op-kal-loo* of the Wascos at the Dalles.)

Ne-ukw.

S'han-nih, (? *Sah-wun-ugh* of the Cowlitz tribe.)

Kwin-nat-tit, (? *Quinnat.*)

S'hun-no, (? *Huddo*, or *Hunno*, of the Nisquallies.)

* See list of species, with accompanying Indian names.

From the Cowlitz river the *Sah-wun-ugh*, or *Sab-o-uch*, also the *Hwal-lat'n.*

From Puget Sound and vicinity *Keh-o-oh*, or *Skeh-ooh*, from Hood's canal. This fish is caught in January. Its bones are said to be very hard. (See foot note 13, attached to list of Indian names for salmon.)

From near Whidby's island the *Skai*, or *Sky*, (Skadgett.) This is a very fat kind, with a hooked nose, caught in September.

To-o-odlt, or *To-walt*, the large kind, found in July at "Tobin's mill," Dwamish river.

To-mutsh, from Simiahmoo, near Bellingham bay.

For the benefit of collectors, or those inclined to study this group from fresh specimens, I have added a list containing the scientific synonyms of all the species yet recognized as being found in the waters of Oregon and Washington Territories, as well as the names by which they are commonly known to the settlers, and also the Indian names in as many dialects as I have been able to collect. The Indian names will be of great service to collectors and students, although they must be relied upon with caution. George Gibbs, esq., says : "Indian observation is good, but in certain cases, especially where differences between species are but slight, they are liable to mistakes, as their information extends only to one season for individuals. I have sometimes thought that they apply *different names to males and females of the same species of salmon*, as we know they do to the male and female *elk*. I have ascertained, beyond a doubt, that different names are applied to the same salmon when '*fresh run*,' and *when exhausted.* This is not only the case with the tribes on Puget Sound, but, as we see by Mr. McDonald's notes, the same custom prevails with those living high up on the Columbia."

List of salmon and trout found in the waters of Washington Territory and Oregon, with their scientific synonyms and common names as known to the whites, together with their names in the different Indian languages and annual periods of arrival from the sea.

Scientific synonym.	Vernacular.	Chinook jargon.	Columbia river.				Puget Sound and vicinity.			Periods of arrival from the sea.
			Lower Chinook.	Upper Chinook, (Wasco.)	Spokane and Colville.	Yakima and Walla-Walla.	Nisqually.	Clallam.	Lummi.	
1. *Salmo quinnat*, Rich	Spring silver salmon	Tyee salmon	*a* Quinnat	..	*b* See-met-leek	? Kwin-nat-tit	*d* ? Satsup	? Kwit-shin . Klutch-in..	..	April and May.
2. *Salmo paucidens*, Rich	Weak-toothed salmon	..	*c* ? Quannich	..	*b* ? Stzoin	..	..	..	..	May and June.
3. *Salmo argyreus*, Grd.	..	..	..	..	..	..	*h* ? Satsup	..	..	Autumn.
4. *Salmo tsuppitch*. Rich	? White salmon	..	*a* Tsuppitch	..	..	? Watch-pitch-ee ? Ik-kown	..	..	..	? September.
5. *Salmo truncatus*, Suckley	Silvery winer salmon. Square-tailed salmon..	..	..	..	..	..	*m* ? Skwowl	Klutch-in	..	? Mid-winter.
6. *Salmo gairdneri*, Rich	Spring salmon	Tyee salmon	*c* Quannich	..	*b* Cha-cha-ool	..	..	..	..	May and June.
7. *Salmo gibbsii*, Suckley	Black-spotted salmon trout	..	..	Ic-kwan-eek	..	Shoo-shines	..	..	..	Not anadromous.
8. *Salmo confluentus*, Suckley	..	..	..	..	..	..	*g* To-o-otldt To-watl..	..	..	June.
9. *Salmo scouleri*, Rich	Hooked-nosed salmon	..	*a* ? Ekewan	..	*b* Keasoo	..	*e* Sko-quid .. Sko-witz..	*e* Kutch-kuss. Met-hlihts..	..	September and October.
10. *Salmo gibber*, Suckley	Hump-backed salmon	..	..	..	..	..	Huddo	..	*f* Hunnun	September and October in alternate years.
11. *Salmo canis*, Suckley	Dog salmon, spotted salmon	Le kai	..	..	..	..	Tl-hwhai	..	..	November.
12. *Salmo spectabilis*, Girard	Red-spotted salmon trout	..	..	..	..	..	*n* ? Pus-sutch	? Com-mah-mah	..	Mid-summer and autumn.
13. *Salmo (Fario) aurora*, Grd.	..	..	..	..	..	..	..	..	..	..
14. *Salmo clarkii*, Rich	Brook trout	Tenas salmon	..	*i* Op-kal-loo	..	..	Kwus-putl	..	..	See remarks on the species.
15. *Salmo (Fario) stellatus*, Grd.	Brook trout	Tenas salmon.	..	*i* Op-kal-loo	..	..	Kwus-putl	..	..	Not anadromous.
16. ? *Salmo (Salar) lewisii*, Grd.	Missouri trout	..	..	..	..	..	..	..	..	Not anadromous.
17. *Thaleichthys pacificus*, Grd.	Eulachon	U-lan	..	..	..	..	Kwul-lus-teo	..	..	

a Given on Gairdner's authority.—(See RICH., F. B. A.)

b Angus McDonald, esq., *in lit.*

c "Queachts," by mistake; Dr. Gairdner. (See RICH., F. B. A.) Dr. Gairdner's labels were misplaced.

d This fish is the *Yoo-mitch* of the Skadgetts. When worn out it is called by them, and the Nisquallies also, *Yoek* or *Yokw*. This name is also applied by the Nisquallies and Puyallups to exhausted individuals of a species which, when "fresh-run," is known to them as the *To-watl*, or *To-o-oadlt*, a very large kind, which I have thus far been unable to identify. It is taken in Black river, a branch of the Dwamish, about twenty-five miles, as near as I recollect, from Puget Sound. The Skadgetts apply a different name to that fish when exhausted, calling it *Skole-kum*. According to Mr. Gibbs, the Skadgetts call all fresh-run salmon *Sche-dad-hu*, which is *generic*, and does not prevent specific names, which again are changed according to the condition of the fish.

e The *Skadgetts* say that they have a second variety or species of *hook-nosed salmon*, which they call *Skai*, or *Sky*.—(See notes under head of *S. scouleri*.) According to Mr. Gibbs, this hook-nosed salmon is called by the Clallam Indians *Kutch-uks*, and is identical with the Skowitz of the Nisquallies. He adds that another very similar fish is called by the Clallams *Met-hlihts*. It is the white or pale fleshed salmon caught in September and October, and is, perhaps, the *Kutch-ulls* (called also *Kutch-kuss*) partially exhausted.

f Dr. C. B. Kennerly.

g ? Not the *To-watl* of the Skadgetts, referred to in note *d*.

h A specimen of this fish, described by Dr. Girard as the *S. argyreus*, was sold to me by a Nisqually Indian, who called it *Satsup*. I am inclined to think that it is not their true *Satsup*, caught in spring.

i Both of these trouts are confounded by the Indians and settlers. A trout is found in the Cowlitz river which is called by the Indians "*Hwal-lat'n*." It is probably the *S. clarkii* of RICHARDSON.

j No note.

k Is probably found in the headwaters of Clark's Fork.

l Mr. George Gibbs.

m Mr. Gibbs says that *Skwowl*, like *Sche-dad-hu*, (see note *d*,) is *generic*, and, among the Skadgetts, applies to but two kinds, the *Yoo-mitch* and the *Keh-oo'h*.

n Also called *Chewagh*, apparently identical with the *To-mutsh* of the Simiahmoo Indians—(Gibbs.)

Dr. Cooper furnishes the following memoranda:

"In consequence of not having sufficient alcohol for the purpose, I never preserved specimens of the various species of salmon which frequent the Columbia and the rivers of Shoalwater bay, excepting the heads of several species collected during the journey east of the Cascade range, and which were destroyed from weakness of the alcohol. Yet a few remarks upon their habits, made during my residence there, may not be uninteresting.

"Salmon enter the Columbia river in large numbers about the 1st of May, and are caught then at Chinook Point, a few miles above Cape Disappointment. From this fact they are generally known as the "Chinook salmon," and are celebrated not only in the Territory but in California as the best salmon caught on the coast. The reason for its superiority when caught at Chinook Point is probably that, this being the first point where they can be taken after entering the river, they are still in fine condition, while after ascending the river they become thin and lose their finest flavor. It seems to be generally believed that they do not feed in fresh water, the stomachs of those caught further up being always empty. It may easily be imagined that this must soon exhaust them, and it seems almost incredible that they should ever be able to go up four hundred miles, over innumerable rapids and falls and against a current which must require their constant exertions to contend with. But by reference to my journal it may be seen that we found them in great numbers in the Okanagan river, at the 49th degree, where they had every appearance of having travelled all the way from the ocean. Their fins and tails were so worn down as to be almost useless, their color had changed to a dappled mixture of red and white, and they were emaciated so as to be a mere mass of skin and bones. But still they struggled on up, obedient to the blind instinct which led them to seek the very headwaters of the river to find a fit nursery for a progeny which they should never know.

"It of course excited much speculation in our minds as to the law of nature which should doom so many thousands of fish to certain death, and apparently, contrary to all analogy in the class of fishes, to die after making but one deposit of eggs. No solution of the matter was then suggested, but in thinking it over since, I have arrived at a theory on the subject which I will now state:

"It will be observed that such large numbers of dead or dying salmon are found mostly at the headwaters of streams, and that they increase in number the further we ascend from the sea. It is also the fact that great numbers go up the small streams emptying into the sea from the Coast range, and do not there die in any quantity unless they have to ascend many falls and rapids. I never saw anything like the number of salmon in that condition at Shoalwater bay, although I have seen tons of them there.

"Another noticeable fact is that all those seen in the Okanagan river were small, not more than two feet long, and very uniform in size. Besides this, they seemed to be of the same species as we saw further down the Columbia. They certainly were not of any species of trout constantly inhabiting the river, of which I had already seen three. Now, the reason I would assign for the 'wearing out' of some salmon annually is this: Shoals, probably composed of fish of different ages, enter the river, the larger and smaller keeping in distinct bodies. Their ova are more or less mature, perhaps according to the age of the fish, and they continue to ascend the river until the ova become ready for deposition. This I know often occurs quite near the sea, as salmon may be seen making their *nests* in the clear water of the Willopah, not more than fifteen miles from its mouth. But that it is not always so is shown by

the very fact that others continue to ascend for a long time after. Those in which the deposition takes place soon after they enter, doubtless return lightened and vigorous to the sea, while those in which the maturation is more retarded must keep on ascending as long as the water is deep enough for them to swim in, when they probably remain stationary for awhile, unless they fall a prey to the numerous enemies always watching for them in such places. Those which go up the Columbia can alone be supposed to go far enough to become worn out, and such can never return to the ocean, but are found dead and lining the shores of the river in immense numbers.

"I cannot determine whether the salmon which are caught at Chinook Point in May are of the same species which are found further up in the fall, but think that they are all bent on the same errand, although far the greatest number enter the river in autumn. They are then much less fine than in spring even at the mouth of the river. I have little doubt that quite as good salmon may be taken in small numbers in the mouths of other rivers in spring, but they are not fished for on account of their scarcity.

"As may be supposed from the fact of their not eating in the rivers, salmon cannot be taken with a baited hook after entering fresh water. The mode usually adopted in shallow water is to pull them out by means of a strong iron hook, six inches around its bend, fastened on to a long pole. This is easily put under them, as they appear regardless of everything but their own immediate object. Another mode, chiefly followed by the Indians when they first enter the bays, is to spear them. They often swim, in calm weather, close to the surface, so that the sharp eye of the savage can detect a slight ripple produced by their back fins. The salmon being there quite timid, it requires much caution to enable the Indian to get a fair blow at them, but when he does it rarely misses its aim. With the swiftness of a musket ball he launches his spear, and its long barbed head piercing entirely through the fish, the shaft at once separates from it and floats off on the water. But a strong line holds the barb, with which the fish is soon pulled into the canoe and despatched by a blow on the head with a wooden mallet, made for the purpose. This is necessary, because the canoe used in this kind of fishing is often barely large enough to hold a man, and the struggles of a salmon four feet long would upset it, besides the probability of its jumping out. The *seine* is used to some extent in the Columbia and in Puget Sound. I once caught a fine salmon, fresh from the ocean, with my hands. It had entered a little brook with the rising tide, and when it fell attempted to get out, but was stopped on the gravelly flats which border Shoalwater bay, and where the brook spreads out into many shallow branches. I was first attracted by its violent flapping as it attempted to get down into salt water, and easily captured it. It was like others caught in the bay, quite as good as the famed *Chinook* salmon."—C.

In the preceding remarks by Dr. Cooper we find many interesting facts mentioned, some of which are new, and others corroborating the statements of previous observers. The wearing out of the fins, tails, &c., spoken of as occurring in those fish which ascend violent and rocky streams is not uncommon. In Richardson's F. B. A. III, pp. 216, 217, there is an extract from Harmon's *Travels in North America*, 1820, containing the following remarks on this subject: After stating that about the middle of August the salmon appear in the larger rivers of New Caledonia, (British Columbia,) lasting plentifully until about the beginning of October, Harmon says: "For about a month they come up in crowds, and the noses of some of them are either worn or rotted off, and the eyes of others have perished in their heads; yet, in this maimed condition, they are surprisingly alert in coming up rapids. These maimed fishes are

generally at the head of large bands, on account of which the natives call them *mee-oo-tees*, or chiefs. The Indians say that they have suffered these disasters by falling back among the stones when coming up difficult places in the rapids which they pass."

The method of capturing salmon by "hooking" them, in the manner described by Dr. Cooper, is in vogue with the Indians of Puget Sound, who, in this way, take vast quantities of the *autumnal* species, which, as already stated, are fond of entering the more shallow streams.

At the great *Dalles* fisheries on the Columbia I did not notice the disposition of the salmon to arrive in series according to age, but in June, 1855, I remarked, on the contrary, that vast numbers of fish *of all sizes*, varying from a pound and a half to 30 or 40 pounds, were taken promiscuously together.

The question whether all individuals of certain species of salmon do not die in fresh water soon after spawning, none returning to the sea, is a mooted point on our northwestern frontier. Pallas, in speaking of certain of the salmon of Kamtschatka, takes particular pains to state that they do not return to salt water. Thus, in referring to the *S. proteus*, or hunchback, he says: "After the month of August has been passed in the functions of generation all of these fishes perish in the rivers, and strew the land and the banks of the rivers with their dead bodies, *none* returning alive to the sea."—(See Pallas Zoographica Rosso-Asiatica, *Fishes*, p. 377 ; also translation beyond under the head of *S. gibber*.)

On this subject Dr. Scouler remarks as follows:*

"Pennant says the Kamtschatka salmon die without returning to the sea after spawning. I never heard such an opinion mooted on the northwest coast, and saw nothing to confirm it; but, as the streams which the American salmon ascend are often extremely shallow, and as they spawn in Observatory Inlet during the months of July and August, when the water is at the lowest, I should suppose that great numbers must perish from emaciation, (for their flesh then becomes white, or at least a great deal less red, and of bad quality,) and from the extreme difficulty they must experience in returning to the sea from the want of water, and perhaps from its high temperature. Thousands also must be devoured by the osprey, the white headed eagle, and the otter, in the fresh waters, and by the seals in the sea, so that I should think few survive. I am unable, however, to say whether any return to the sea or not."

Since Dr. Scouler wrote, many white settlers have located themselves on the north Pacific coast of America, and large and flourishing settlements have grown up. In consequence, observation in all branches of natural history has been much extended, and our knowledge of that hitherto obscure region increased. It seems from the accounts of recent observers that *certain species* of salmon do not, in general, return to the sea after spawning, but die in the fresh water streams remote from the ocean. Other species, on the contrary, seem to return to the sea, no matter to what distance in the interior they may have penetrated. Of course, in speaking of a species we mean the bulk of individuals belonging to it, forming the "run" or migration. Of all kinds vast numbers die from exhaustion and the attacks of their various enemies, but certain species appear, as a rule, to die out after completing their procreative efforts, while the great number of individuals composing other species *return to the sea*. Some think that *distance from salt water* is the governing condition affecting the return. This it does to a certain degree, but still the individual instincts and tenacity of life of certain *species* have probably more to do in regulating it. Angus McDonald, who writes from the Kettle falls, a point far up the Columbia, says that the *see-met-leek* (*S. quinnat*) are the first in the season "to

* Scouler *in lit.* Rich. F. B. A., III, 159.

arrive and to *die.*'' Again, he says of the *stzoin*, ''they are not found dead, and are supposed to return to the sea.''

The Nisqually Indians say that the majority of the *Tl'hwhai* salmon return to salt water after spawning; that many of the skowitz return, but that *more* die in fresh water. They think that but few of the other species, in proportion to their numbers, ever get back into salt water. The *huddole*, especially, generally die in fresh water, and they doubt if these return at all, or, if they do, only a few lucky individuals escape.

I am assured, by a reliable observer, that he has found, in the autumn, the banks and sand bars of the Cowlitz river—a stream emptying into the Columbia at a comparatively short distance from the ocean—lined with dead and dying salmon. This argues in favor of death occurring more according to difference in species than from fatigue or distance from the sea. Fatigue and distance, however, have full weight in increasing the mortality. In conclusion we therefore venture to suggest that probably certain individuals of *all anadromous species* do return to the sea after spawning; but that the comparative numbers of individuals thus returning is varied, *cæteris paribus*, by distance from the sea, or the character of the streams traversed; and that the desire or instinct to return to the ocean after performing the sexual duties is much more strongly manifest in certain species than in others.

The incurvation of the extremities of the intermaxillaries and chin, in certain species, varies greatly with the age and sex. According to some observers the *females* of particular kinds are always destitute of the ''hooked snout,'' while the adult *male*, even when in good condition, always has a lengthened decurved intermaxillary protuberance.* Other species, when in good condition, have both jaws symmetrical; but, when emaciated, an *apparent* prolongation, in a downward direction, of the intermaxillary protuberance is seen, and a corresponding exaggeration of the ''knob'' at the chin. Much of this is induced by the absorption of the fat and shrinking of the tissues along the sides of the jaws, the deficiency in contour thus produced by contrast causing the unabsorbed cartilaginous extremities to appear as if unnaturally developed. Examples of this are seen in the changes found in the mouth of the *S. quinnat* at different seasons, and also in that of the European *S. salar*. Indeed, I think it probable that much of the confusion in the synonomy of some of the European species has been caused by mistaking certain fish, which, in other respects, agree closely, but have the *apparently* elongated extremities to the snout and chin, for other species possessing normally their characteristics when not emaciated, and which, in other respects, agree very closely. Perhaps in this way the *S. salar* and *S. hamatus* have been confounded. Beyond a question the adult male *S. scouleri* has the decurved cartilaginous protuberance *always* well marked, which the female equally often *lacks*. The *fresh run* species, known as the *S. quinnat*, when in good order has a mouth with regular outline in both sexes. I have, at times, noticed, in *very large* and fat individuals, that the snout was enlarged and somewhat decurved. I account for this by supposing that they are fish which, having been much emaciated from spawning at some previous season, had returned to the sea. Becoming recuperated and much increased in size, they have again ascended the rivers for the purpose of procreating, their condition and flesh having been entirely regained, with the exception of the fat deposits about the bones of the mouth. This theory, although, perhaps, fanciful and incorrect, is the best that we can offer while situated so remotely from the field, where alone the history of the fish can be thoroughly ascertained. As a reason why, on the contrary, the foregoing speculation may prove false is

* See remarks concerning this character contained in the account of *S. scouleri*.

the fact that the *very large* specimens seen by me were but cursorily examined, and may, in reality, have belonged to a distinct species.

The discussions which have so frequently occupied the minds of British naturalists concerning the real character and position of the small salmonidae, known to them as "*smoults*," "*grilse*," &c., are of collateral interest to American ichthyologists. The study of this family, in America, is much less trammelled by a multiplicity of names for the immature fish, and, as suggested by Sir John Richardson, may, for that reason, assist much in throwing light upon perplexing obscurities in which the subject is involved in Europe. Many valuable experiments have been carefully instituted by gentlemen in England for settling these vexed questions. Young salmon have been marked and then turned loose, which have been again taken at successive seasons, until gradually a complete chain of evidence has been thus adduced, showing each change, step by step, and link by link, from exteme youth to maturity.

1. SALMO QUINNAT, Rich.

Salmo quinnat, Rich. F. B. A. III, 1836, 219.—DeKay, N. Y. Fauna, IV, 1842, 242.—Storer, Synopsis, 1846, 196.—Herbert, Supplement to Frank Forrester's Fish and Fishing, &c., 1850, 31.—Grd. in Proc. A. N. Sc. Phil. VIII, 1856, 217.—Ibid. Pacific R. R. Reports, vol. VI.—Ibid. Gen. Rep. Fishes, 306.

Common Salmon, Lewis & Clark.

Figures.—A *young* fish called by this name, and probably belonging to the species, has been figured under Dr. Girard's supervision, and appears in the General Report on the Fishes collected by the United States Pacific railroad surveying parties, Plate LXVII.

Sp. Ch.—*Adult:* Head pointed and *large*, forming about a fourth of the length from the snout to the end of the scales on the caudal.* Dorsal outline regularly arched. Caudal *deeply cut out*, (in the dried specimens *forked*.) Snout cartilaginous, as in *S. salar*. Chin pointed, a triangular bare projection extending beyond the teeth. Colors:† "General tint of the back bluish gray, changing after a few hours' removal from the water into mountain green; sides ash gray, with silvery lustre; belly white; back above the lateral line studded with irregular rhomboidal or star-like black spots, some of them ocellated. Dorsal fin and gill covers slightly reddish; tips of the anal and pectorals blackish gray; the dorsal and caudal thickly studded with round and rhomboidal spots, back of the head sparingly marked with the same. Whole body below the lateral line, with the under fins, *destitute* of spots."—(Gairdner *in lit.* Rich. F. B. A. *Fishes*, 220.) Scales large. Branchial rays varying from 17 to 20.

Young:? "Body fusiform in profile, compressed; head forming about the fifth of the total length; maxillary bone curved, extending beyond the orbit; anterior margin of the dorsal equidistant between the extremity of the snout and the insertion of the caudal. Dorsal region olivaceous, studded with irregular black spots; dorsal and caudal fins similarly spotted. Region beneath the lateral line unicolor, silvery along the middle of the flanks, and yellowish on the belly. Inferior fins unicolor. Head above blackish gray; sides bluish gray."—Girard.

In shape, and in many other particulars, this fish agrees with the description given in Pallas, Zoog. Ross. Asiat. of the *S. orientalis*, and, as quoted by Brevoort in *notes on some figures of Japanese fish*, like it, reaches a weight of sixty pounds; ascending the *larger rivers only in the months of April, May, and June;* in having fleshy lips, and in gastronomic excellence. It also has a large pointed head, with very similar jaws. It differs from Mr. Brevoort's figure in having the tail much more deeply cut out—almost forked—and in having spots on the back and head. It also but seldom attains the large size given above, the average being usually about twenty-five pounds. Valenciennes says that the *S. orientalis* has numerous *crescent*-shaped spots above the lateral line. This remark is based on a drawing, taken by Mertens, of

* The size of the head of most salmon seems to vary in the two sexes, that of the male being larger.

† The colors, when given under the head of *Sp. Ch.* in this report, are always those of the fish fresh run from the sea, except when the contrary is stated.

a female.—(See Brevoort's work above quoted, p. 23.) The *S. quinnat*, according to Gairdner, has the spots *differently* shaped. In a memorandum furnished me by George Gibbs, esq., he says that in a visit to Chinook, near the mouth of the Columbia, he saw "the *true* spring salmon of the Columbia. Speckled on back, fins, and tail, with *half-moon* spots. Tail in *large* specimens not always spotted. Tail *forked.*"*

The quinnat is designated by Lewis and Clark as the "*common salmon*" of the Columbia. It was first scientifically described by Sir John Richardson from specimens and notes obtained from Dr. Gairdner, who was then (about the year 1835) living at the trading post of the Hon. Hudson Bay Company, situated on the right bank of the Columbia, nearly opposite the mouth of the Willamette river, about one hundred miles from the ocean, then and still known as Fort Vancouver. While stationed as surgeon at that important point, Dr. Gairdner, in a most praiseworthy manner, busied himself actively in studying the natural history of the region, and, in connexion with the labors of Tolmie, Townsend, Nuttall, and Douglass, in the *field*, and of Richardson, Hooker, Audubon, and Bachman, in the *study*, presented to the public almost all that was known to naturalists of that remote portion of the world up to the period when the late scientific explorations were undertaken under the auspices of our government.

This salmon is, perhaps, the finest of all that enter the rivers and inlets of our Pacific possessions. The adults are readily recognized by the settlers from their great size and their large, deeply-forked tails. When fresh from the sea they are in superb condition for the table, equal, in our estimation, to the best English or Scotch salmon. The color of the flesh is of the richest "salmon red." The general external appearance of the fish presents very bright silvery reflections. They first arrive in the Columbia river during the month of April—the periodical advents usually varying but a few days. Lewis and Clark speak of their first arrival at the Skilloot village, below the site of Fort Vancouver, on the 18th of April, 1806, and at the Dalles, (two hundred miles above the mouth of the Columbia,) in the year 1807, on the 19th of April. Major G. J. Rains, United States army, noticed them at the latter place, in 1854, on the 28th of April, and I myself saw the first of the season, in 1855, April 11. George Gibbs, esq., in MSS. notes informs me that in 1853 the same species were "in season" at the mouth of the Columbia on the 20th of April.

The *quinnat*, in an economical point of view, is by far the most valuable salmon of any species found in Oregon. The extreme richness and delicacy of its flesh cause it to be much preferred for salting; and were it not for the hitherto high prices of labor, barrels and salt, it would have ere this been found a staple article of export from the Columbia.† In numbers, they seem to be inexhaustible, and are readily taken in nets and otherwise. During the "season" they are so abundantly taken at the rapids near the Dalles that, notwithstanding the high rates at which most articles of domestic consumption are sold, I have frequently purchased noble specimens of this fish, weighing 20 pounds or more, each, for the small price of a quarter of a dollar! The Indians on the Columbia take immense numbers, eating what they need while fresh, and drying thousands for winter consumption or for trade. The principal method of capture employed at the Dalles is by "scooping" at random in the rapid water as it passes a

* I do not consider that the *absence* of spots on the body is of much value as a specific character in *all* cases. But where they *occur* I think that their *arrangement* and *shape* is of great importance. The unspotted individuals are, perhaps, in some instances, simply the representatives of albinoes in birds and quadrupeds.

† For further particulars concerning this subject, see "General Remarks"

projecting rock along the banks of the stream. The salmon keeping close to the shore, in order to avoid the force of the current, take advantage of "shore eddies" in their ascent. The Indian selects a proper location, generally a projecting rock, upon which he builds a platform, and with a "scoop net," about four feet in diameter, attached to a long pole, rapidly sweeps the water below. The net passing down with the current, and immersed four or five feet below the surface, is alternately dipped and drawn up, again to be plunged in the boiling waters above. During the height of the season it is not uncommon for a single man to thus take twenty or thirty fine fish in an hour. The time chosen is usually during the long twilight of the evening or early morning. Whether this is because the fish do not "run" during the bright hours of the day, or because they, *seeing better*, avoid the net, I am in doubt.

For subsequent consumption the salmon are split open, and the entrails and backbone taken out; they are then hung up in the lodges to dry in the smoke. When perfectly dry they are packed in bundles, and kept in baskets or mats, and in some places, as along the river from Walla-Walla to Fort Colville, large stores are placed on platforms raised on poles some 12 or 15 feet from the ground. This is to protect them from the ravages of wolves. To guard against rain, and the plundering propensities of crows, magpies, and ravens, they are covered by mats or strips of bark, and occasionally with rough-hewn boards; no salt is used by the savages in preparing the fish, yet, nevertheless, the food thus preserved keeps in good order for several years. Dr. Cooper furnishes me with the following notes concerning a salmon, which he has had many opportunities of observing while residing near the Columbia river:

"The name of this salmon is evidently a corruption of that by which the Indians distinguish a small river north of the Chehalis, and which is celebrated among them for the excellence of its salmon. As pronounced by them, it is QUIN-NAI-ŪLT. I have eaten fish from there smoked and also salted, but never saw one fresh. It is smaller than the preceding, those I saw not being more than two feet long. If the same as Richardson's fish, which is probable, it is singular that the Indians should find it so much superior in that river, and that they should contend that it is found there only. I have heard, however, that the same species was caught sometimes in a river running into Shoalwater bay, and it is not probable that the name of the above river is derived from that of the Salmon, and not, as is generally supposed, the contrary. It would appear as if the same frequent the Columbia also."—C.*

Dr. Gairdner says of the *quinnat*:† "This is the species which ascends the Columbia earliest in the season, commencing its run in the month of May, in enormous shoals, clearing the greater Dalles, cascades, and rapids innumerable, and making its way to the sources of the river where, at the close of the season, it is found dead on the beach in great numbers. The muscular power of this fish is truly astonishing even in a class of the animal kingdom remarkable for vigorous movements. * * * * * Individuals of this species have often been seen with their noses fairly worn down to the bone, and in the last stages of emaciation, yet still striving, to the last gasp, to ascend the stream. The selection of particular streams for spawning is a remarkable feature in the history of this fish. It ascends the Willamette, Snake, and Kootenay rivers, &c., and passes by the Kawalitch, Okanagan, Dease's river, and others, seeming to prefer a rapid stream, uninterrupted by falls, to one of a quieter character, though other circumstances must regulate its choice, as some of the rivers which it refuses to enter have an extremely rapid current.

*I think it probable that the fish of the Quin-nai-ult river is distinct from the present species. The *quinnat* is an exceedingly *abundant* fish in the Columbia, and is much larger than those mentioned by Dr. Cooper.—S.

†See RICH. F. B. A. Fishes, p. 219.

"It is this salmon which forms the main subsistence of the numerous hordes of Indians who live upon the banks of the Columbia, and it is known by the name of *quinnat* for one hundred and fifty miles from the mouth of the river. It attains a large size, weighing often from thirty to forty pounds."

Lewis and Clark seem to have confounded the present species and the *S. Gairdneri*. They say: "The *common salmon* are usually the largest, and weigh from five to fifteen pounds. They extend themselves into all the rivers and little creeks of this side of the continent, and to them the natives are much indebted for subsistence. They begin to run early in May. They are never caught with the hook, and we do not know on what they feed." * * * * * "The flesh of this fish, when in good order, is of a deep flesh-colored red, and every shade from that to orange yellow; when very meagre it is almost white. The roes are in high estimation among the natives, who dry them in the sun, and preserve them for a great length of time; they are of the size of a small pea, nearly transparent, and of a reddish yellow cast. They resemble very much, at a little distance, our common garden currants, but are more yellow."

The same travellers give an interesting account, in detail, of the manner in which the Indians, at that time, preserved the salmon for subsequent use, by drying it as in the manner already prescribed, and then, pounding it fine and packing in baskets, it is covered and "stacked" for use.*

A fish called by the Nisquallies the "*satsup*," corresponding in many particulars to the *S. quinnat*, ascends the tributary streams of Puget Sound at the same time that the *quinnat* does the Columbia. I have obtained no specimens of this. It is said to be a fine red-fleshed fish, of good flavor, and handsome general appearance.

Another salmon described by the Indians, as different only in size, ascends a few particular streams, and is very large. One of the localities where this fish is taken abundantly is at the fishery on Black river, a branch of the Dwamish. The species is called by the Nisquallies *To-o-odlt*, or *To-walt*, (Gibbs,) when fresh, and *Yo-ke*, or *Yo-ek*, when exhausted. The fresh run have a similar name applied to them by the Skadgetts, but are called *Skole-kum* when worn out and emaciated.

If identical with the spring salmon of the Columbia, I am inclined to think that the kind first mentioned as running up the affluents of Puget Sound will be found to be the *S. Gairdneri*, and that the large "*towalt*" will prove to be the *S. quinnat*. (Regarding the *towalt*, see other remarks under head of *S. confluentus*.)

Two imperfectly preserved skins of the *S. quinnat* are now contained in the Smithsonian collection. They were obtained from Mr. James Wayne, of Astoria, Oregon, and were, when fresh, without doubt, good specimens of the present species. For interesting notes on the species, see beyond, under the head of *General Remarks*, the information communicated by Augus McDonald, esq.†

* An extract from Lewis and Clark's Journal, describing this, is contained in Rich. F. B. A. Fishes, p. 218.

† Skins stuffed in as nearly natural shape as possible, and then varnished, would be highly desirable in our national collection. Labels giving the date of capture, Indian names, and sex, would add greatly to their value. Mr. Wayne's specimens, rough-dried as they were, have been, nevertheless, of the greatest advantage in studying the collection, as they have enabled us to decide with accuracy their identity with Richardson's species, and have formed a stand-point for studying the other kinds.

2. SALMO PAUCIDENS, Rich.

Weak-toothed Salmon.

Salmo paucidens, Rich. F. B. A. III, 222.—Herbert, Sup. to *Fish & Fishing*, &c., 1850, 36.

Sp. Ch.—This species, described by Richardson from the notes of Dr. Gairdner, and from some fragments received, I have not yet been able to obtain. The specific characters deduced from Richardson's description are as follows: Dorsal outline nearly straight. Back of head and body bluish gray. Belly white. *Tail and fins unspotted.* Caudal forked. Teeth sparingly scattered, and feeble. *

They reach, according to Dr. Gairdner, an average weight of three or four pounds, and ascend the Columbia in the spring, in company with the *S. quinnat* and *S. Gairdneri*. If not the young of some other species already known, it must certainly be considered as distinct. Sir John Richardson, in F. B. A, Part III, p. 223, seems to think it the same as the "*red-char*" of Lewis & Clark, and supposes that the *S. Scouleri* may have also been thus named by those travellers. It is very difficult to determine what species they really alluded to. They say: "The red-char are rather broader in proportion to their length than the common salmon; the scales are also imbricated, but rather larger; the rostrum exceeds the under jaw more, and the teeth are neither so large nor so numerous as those of the salmon. Some of them are almost entirely *red on the belly and sides;* others are much more white than the salmon; and none of them are variegated with the dark spots which mark the body of the other."

As to the *red color* on the sides and belly, mentioned by those explorers, it is a mark of but little specific importance, as the females, and occasionally the males of the *S. quinnat*, *S. Scouleri*, *S. canis*, and probably those of several other species, become red, and sometimes purplish, after remaining some time in fresh water. Indeed, it is one of the first indications of the declining powers of the fish; and instead of being an evidence of high vital action, seems to be *scorbutic* in its character, forcibly reminding one of the redness caused in the human subject by the peculiar *cachexia* which produces scurvy and *purpura haemorrhagica.*

It seems, from this, not unlikely that the term "red-char" was applied to several species when in bad condition.

No Oregon salmon with which I am familiar agrees in the characteristics given of *S. paucidens.* There is, however, a kind of salmon which runs up the small rivers below the "Great Falls" (Dalles,) that is said to be very bright and silvery, and called, in consequence, the "*white salmon*" by the settlers, and a river which they ascend in great numbers by preference is named, from that circumstance, the *White-salmon river.* It is possible that this "*white salmon*" may be the *silvery-white salmon-trout* of Lewis and Clark, and perhaps identical with Dr. Gairdner's *weak-toothed salmon.*—(See beyond). Lewis and Clark say: † "Of the salmon-trout we observe two species differing only in color. They are seldom more than two feet in length, and *much narrower in proportion* than the salmon or *red-char.* The jaws are nearly of the same length, and are furnished with a single series of *small* subulate straight teeth, not so long nor so large as those of the salmon. * * * * One of the kinds, of a silvery white color on the belly and sides, and a bluish light-brown on the back and head, is found *below the Great Falls*, and *associates with the red-char* in little rivulets and creeks. It is about two feet eight inches long, and weighs ten pounds." * * * "The white kind found below the falls is in excellent order *when the salmon are out of season and unfit for use.*"

* The *young* of most species of salmon have the tails *forked.* In the present case the small teeth, forked tails, and small size, may indicate the young of a species already known, or of which the adult is yet to be described.

† See quotation in Rich. F. B. A., Part 3, p. 163.—The *italics* are our own.

Sir John Richardson, in the *addenda* to the fishes in F. B. A., acknowledges the receipt of several specimens of three different kinds of trout from P. W. Dease, esq., taken in New Caledonia, (British Columbia.) One named *suppai*, he says, "resembles the young of an anadromous salmon. The scales are thin, flexible, and bright; the body is marked chiefly above the lateral line *with scattered crucial or crescentic black spots*, and the dorsal and caudal are thickly dotted with oval blackish marks in rows.* The fins generally, but the under ones especially, are small, and the latter appear to have been of a pale hue. * * * * The characters ascribed by Dr. Gairdner to the *T. tsuppitch* of the Columbia agreeing well with this fish, and the names being so similar, we may conclude that they are the same; and also that they belong to the species named *silvery-white salmon-trout* by Lewis and Clark." If it were not that Gairdner says distinctly that the fins and tail of the *T. tsuppitch* are *destitute of spots*, I should think it very likely that the *T. tsuppitch* is the same as the *suppai*, perhaps the same as the *silvery-white salmon-trout* of Lewis and Clark, which, it is not unlikely, is that now known to the Oregon settlers as the "*white salmon*," although it *may* be the *S. paucidens*. There are, however, differences which cannot readily be explained between Lewis and Clark's statements concerning the size and period of "season" of their *white salmon-trout* and Dr. Gairdner's notes concerning the *S. paucidens*. Lewis and Clark state that its weight is "*ten pounds.*" Gairdner's *S. paucidens* "has an average weight of *three or four pounds.*" Lewis and Clark say that their fish "*is in excellent order when the salmon are out of season.*" Dr. Gairdner remarks that the *S. paucidens* "is taken in company *with the S. Gairdneri*" *and* "*the quinnat*," (the *common* salmon of Lewis and Clark.) The *white salmon* of the settlers runs up the rivers much later in the season than the spring salmon noted by Dr. Gairdner, and, if my memory serves me, chooses the same month as the *S. Scouleri;* in this respect agreeing with the *S. tsuppitch*, which, according to Dr. Gairdner, ascends with the "ekewan," (*S. Scouleri?*)

The salmon described by Girard in the General Report on Fishes, Pacific Railroad Reports, vol. 10, page 312, as the *Fario argyreus*, Grd., may, perhaps be the *S. paucidens*, Rich. It is an *unspotted* fish, *vide* Plate LXX, Fig. 1.—(See remarks beyond, under head of *Salmo argyreus*.)

3. SALMO ARGYREUS, Grd.

Plate LXX.—Gen. Rep. Fishes.

Syn. "*Salmo argyreus*, Grd." (*Mss.*) Pacific R. R. Rep. Gen. Rep. Fishes, 1858, p. 312.
Fario argyreus, Grd. Proc. A. N. Sc. Phil. VIII, 1856, 218.—Ib. Pacific R. R. Rep. vol. VI, Part IV. p. 32.

As the description of this species given by Dr. Girard seems based on the characters of two *young, partially grown* fish, the specific characters thus deduced are probably much unlike those of the adult in good condition. For this reason no specific distinctions are given in this place; but, for the convenience of those interested in the subject, they are inserted in the accompanying note.

My own specimen, marked 580, Smithson. Cat. *Fishes*, was caught at the mouth of Nisqually river, (emptying into Puget Sound near Fort Steilacoom,) December 1, 1856. In my note book I find that its belly and sides were bright silvery; back, and top of head, silvery blue. Lateral line strongly defined. It was called by the natives *satsup*.

George Gibbs, esq., in a letter to me, says: "The *satsup* arrives at the mouth of the Puyallup about the end of December, and remains until spring. Towards that season, when the streams emptying into the sound are raised by the melting of the snow, the fish ascend them. This

* In a foot-note Richardson says: "In one specimen the spots on the fins are almost obsolete."

variety is the silver salmon, with *forked* tail. It is not very abundant, and does not run in 'schools.' Weight, 15 to 18 pounds; average, 13." He also mentions a small *unspotted* salmon, which the Indians say grows no longer than 18 inches.

The Indians probably confuse several species under the name of *satsup*, and perhaps consider all *silvery salmon*, with *red flesh* and *forked* tails, as one species.

NOTE.—Mr. Girard describes the species as follows. The color being taken from the preserved specimens are, of course, unnatural, and should have those given above substituted:

"SP. CH.—Body very much depressed, rather deep upon its middle region, and quite tapering posteriorly. Head moderate, constituting the fifth of the entire length. Jaws equal. Maxillary slightly curved; its free extremity extending to a vertical line drawn posteriorly to the orbit. Anterior margin of dorsal fin nearer the extremity of the snout than the insertion of the caudal fin. Bluish gray above; silvery along the middle of the flanks; yellowish beneath."—GIRARD.

4. SALMO TSUPPITCH, Rich.

SYN.—*Salmo tsuppitch*, RICH. F. B. A. Fishes, 1836, 224.—DEKAY, N. Y. Fauna, IV, 1842.—STORER, Synop 1846, 197.—HERBERT, Supplem. to Fish and Fishing, 1850, 39. [Non *Fario tsuppitch*, GRD Pr. A. N. Sc Phil. VIII, 1856, 218.—IB. Gen. Rep. Fishes, P. R R. Reports, 1858, vol. X, 310.]

? *White salmon*, SETTLERS ON THE COLUMBIA.

? *Silvery-white salmon-trout*, LEWIS and CLARK.

FIGURES.—The plate (LXIX, figs. 1—4) in the Pacific Railroad Reports, vol. X, represents the *Salmo Gibbsii* and *not* this species.—(See remarks on *S. Gibbsii.*)

SP. CH.—Convexity of dorsal profile rising gradually to origin of first dorsal, declining from thence to the tail *Caudal forked.* Head small, *exactly conical*, terminating in a *pointed snout.* Commissure of mouth very slightly oblique. Back of body and head studded with oval and circular spots; *sides and fins, including the caudal, destitute of spots.* Teeth minute and sharp; a single row on each palate bone, a very few on the anterior end of the vomer, and a double row on the tongue. [The foregoing description is deduced from Dr. Gairdner's notes in RICH. F. B. A. p. 224.]

The portions *italicized* in the above summary of specific characters, are those differing strongly from a correct description of the fish taken by Dr. Girard for this species, and described by me as the *S. Gibbsii.*

Dr. Gairdner says that this salmon ascends the Columbia with the ekewan, (late in August and during September.) The formula he gives for the *rays* is as follows: "Br. 13; P. 13; V. 10; A. 13; D. 12—0."

Sir John Richardson says that "a spine containing sixty-four vertebræ, and an under jaw with ten curved teeth in each limb," were all the bones that he could with any degree of correctness identify. (This was owing to the damaged condition of the specimens received.) The dimensions in detail of a specimen twenty-one inches in length are given by Dr. Gairdner. In this the anterior margin of the dorsal was one inch nearer the end of the tail than to the tip of the snout. The teeth were "equal in size with those of the *S. Gairdneri*, or perhaps rather larger."

I have myself never succeeded in obtaining this salmon, but am strongly inclined to the opinion that it is identical with the fish now known to the settlers on the Columbia as the "*white salmon.*"—(See remarks on the *S. paucidens.*)

SALMO TRUNCATUS, Suckley.

Short-tailed Salmon; Square-tailed Salmon.

Salmo truncatus, SUCKLEY, Ann. N. Y. Lyc. Dec. 1858.

Typical specimen No. 1134, Smithsonian collection.

SP. CH.—Body fusiform; dorsal profile moderately arched; anterior margin of dorsal fin *much* anterior to a point equidistant between the nose and the insertion of the tail; head small; jaws fully provided with small teeth; tail small, its free

margin, when extended, being almost straight, having a very faint tendency to lunation; scales generally *large*. Colors of the *fresh run fish:* back of head, back, dorsal and caudal fins, bright blue, spotted on the head with roundish, on the fins with oval spots of black; the blue of the back is silvery, that of the head and fins darker; lower parts silvery white, this color extending about an inch above the laternal line and merging itself irregularly into the color of the back; no spots below the lateral line, which is faint and of a bluish dusky color; lower fins pale and unspotted, their tips somewhat darkish.

The specimen upon which the description of the present species is based was an adult female, obtained by the writer in the Straits of Fuca in February, 1857. Its body was fusiform, in its dorsal profile resembling somewhat the *S. quinnat*, Rich. It was, however, more slender than that species, and differed greatly in the form of the head and tail, besides having other marked characteristic distinctions.

The following brief diagnosis may serve to assist in distinguishing the present species from its nearest relatives found in the same region: From *S. quinnat*, Rich., it may be known by the much smaller head and rounded, not pointed, snout. The smooth triangular projection extending in front of the *symphysis mentis* of that species is also wanting. The tail of the adult *S. quinnat* is very deeply lunated, almost *forked;* that of the present species is so abruptly terminated that it has suggested the specific name applied, the end being almost as abruptly truncated as if chopped off with a large knife. In this respect it resembles the adult male of the *Salmo trutta*, Lin., as figured in Agassiz's *Histoire Naturelle des Poissons d'eau douce, Planches, Livraison I, Tab. VII.*

Another difference is in the greater size and thickness of the *S. quinnat*, which not unfrequently attains a weight of thirty or forty pounds, whereas the present fish is usually found not exceeding ten or twelve pounds, and generally much less; and its common length, when full grown, rarely exceeds thirty-two inches. From the *S. Gairdneri*, of Richardson, (not of Girard, see pl. LXXI, Pacific Railroad Reports, which is drawn from the young of some other species,) it is more difficult to be distinguished, both having many characters in common. It is possible that hereafter, upon accurate comparison being made with numerous specimens, they may be found identical. In studying the specimens at present in the Smithsonian collection we were obliged to confine ourselves to the examination of two imperfectly dried skins of the *S. Gairdneri* and one of the present species, which as yet are the only representatives of those species contained in the collection. The following differences, however, were found: the *S. truncatus* has the head smaller and shorter; tail neither so wide nor so long, and more spotted; teeth in the lower jaw more numerous, but smaller; muzzle and chin more pointed; body posterior to anal fin more slender. The lengths of the three skins were much the same, those of the *S. Gairdneri* being slightly greater. The teeth of the latter are larger and more scattered, being in one specimen 9.9 and in the other 10.10 on the arms of the lower jaw. Those of the *S. truncatus* have 14–16 on each side, and, although in line, were dispersed in a pair-like manner—*i. e.*, every other interval being greater. This pair-like disposition of the teeth is not seen in the *S. Gairdneri.*

From the *S. Gibbsii* it may be known by its greater size and much brighter colors, proportionally smaller tail and fewer spots. The dental arrangement, however, is much the same, barring the absence in the *S. Gibbsii* of the pair-like distribution of the teeth already spoken of. This peculiar dental arrangement may be accidental in the specimen preserved, and has, therefore, not been included among the specific characters of the species. For the same reason the well marked presence of *a double row of teeth* on the anterior portion of the *vomer* was not

included. Indeed, the specimens of the species of Salmonidæ from the Pacific coast of America, now in the Smithsonian collection, vary so much in regard to the arrangement of the teeth on the vomer that I have no hesitation in rejecting, for the present, the genus *Fario* of Valenciennes. It is very probable that the arrangement and number of the vomerine teeth depends greatly on the *age* of the individual, and may also ordinarily vary much in individuals otherwise alike.

The female obtained by me from the Straits of Fuca had a very short, small head, forming about one-thirteenth of the total length of the fish. Female salmon usually have smaller heads than the males, but I do not remember ever seeing those of any species so small, compared to the total length of the body, as in the present instance. The under jaw was received nicely and accurately within the upper. The labial, inferior maxillary, and vomerine teeth are very uniform in size, and quite small, those of the intermaxillary larger, but still small.

The name given to the species by the Klallam Indians is *Klutchin*.

While residing at Puget Sound I collected the following information from the Indians respecting the salmon known to the Nisquallies as the *skwowl*, which I consider identical with the *Klutchin* of the Clallums, a specimen of which has served as the typical example of the present species. This fine salmon is second to none in beauty, size, or excellence. It arrives in the bays and estuaries of Puget Sound about the middle of autumn, and towards the first of December commences to run up the larger rivers emptying into the sound. Their ascent of these streams continues through December and January. This arrival of the species in fresh water is not as simultaneous, neither do they arrive in such great numbers at any one time or in "schools," as is the case with the *skourtz* and several other species, but the "run" being somewhat more "drawn out" affords a steady moderate supply to the Indians during its continuance. In the fall and winter large numbers are taken by the Indians from the salt water by trolling with hook and line in the bays and coves of Puget Sound. The bait used is generally a small kind of herring, a little larger than the common sardine of commerce. After entering the rivers it is taken by the Indians in nets, traps, baskets, &c., and also by spearing.

Its flesh when cooked is of a beautiful salmon red, and, as a table delicacy, when fat, as it generally is when "fresh run," ranks equally with that of the *S. salar*, the *satsup*, or the *quinnat*. The Cowlitz river, (a branch of the Columbia,) situated not more than sixty miles from the head of Puget Sound, has salmon of various species entering it at regular periods annually. Indians of intelligence have told me that the species under consideration is the only kind common to both these waters. How far we can place reliance on their statements is difficult to determine.

The distinguishing characters which strike the eye at a glance are its *short* and *small* head, the small weak teeth in the jaws, and the shape of its tail, which is *truncated—not forked.*

I obtained a fine specimen of the *Klutchin*, at New Dungeness, Straits of Juan de Fuca, during the last week of January, 1857. The measurements were as follow:

Upper measurement.	*Inches.*	*Lower measurement.*	*Inches.*
Total length	29¼	Nose to tip of tail, total length	30¾
Head from tip of snout	3½	Nose to pectoral fin	3½
Nose to first dorsal fin	12½	Nose to abdominal fin	14
Nose to adipose dorsal	22	Nose to ventral	20¾
Length *along the lateral line* from nose to base of tail	28	Nose to base of lowermost caudal rays, about	27

	Inches.
Length of caudal fin along its middle	2 1/8
Length along the lateral line from nose to the end of the middle of the tail	29 3/4
Width of base of dorsal fin	3 1/4
Width of base of adipose fin, nearly	3/4
Width of base of pectoral, about	1
Width of base of abdominal, about	7/8
Width of base of ventral	2 3/4
Width of outstretched tail along its free margin. (Line of end of tail when thus stretched almost straight)	7 3/4
Girth just anterior to pectorals	11 3/4
Girth just anterior to abdominals	15 1/2
Girth just anterior to ventrals	11
Girth just anterior to caudal	6 1/8
Adipose fin thick and fat	
Its length postəriorly	1
Dorsal, length *superiorly* (anteriorly)	3 1/4
Ventral, length inferiorly (anteriorly)	3 1/4
Rays—Pectoral	13
Abdominal	11
Ventral	13
Dorsal	12
Caudal	26
Branchial	12.12

The caudal rays in the middle divide each into four fasciculi, which are again subdivided.

Colors.—These were noted six hours after the death of the fish—they were still quite bright and silvery, and are given under the head of *specific characters.*

The lower jaw was received nicely and accurately within the upper. *Sex* not noted.

It is possible that this species may prove identical with the next. The fish resemble each other closely, and many specimens of both species (or varieties) will be required to determine the question properly.

George Gibbs, esq., writing from Puget Sound, after alluding to several other species of salmon, says:

"Besides the above, Swan caught, in 1854, two of the square-tailed salmon; only one Indian had ever seen them before. The rest said they were strangers (*heloima.*) The scales came off very easily on handling."

Again he says: (this time writing from the Columbia river.)

"The *square-tailed salmon* has the body thicker where the tail joins the body than is the case in the common salmon (*S. quinnat.*) Belly silvery white; back not as blue as in the other species, (*? S. quinnat,*) and marked with numerous small roundish spots. *Tail cut sharp across* and not forked."

In the following remarks Mr. Gibbs perhaps refers to the present species, or else to one of the other winter kinds which had not yet finished its sexual duties before the arrival of the *S. quinnat.*

"In 1853, at Astoria, I purchased the first salmon March 10. It was brought from Clatsap, where several had been taken previously. It was not in good order, and weighed but 13 lbs., a female, with eggs, half grown. Sides somewhat discolored, as is common in the fall. Fish more slender than that of the usual spring salmon. I was doubtful whether its different appearance arose from it being a variety, or out of season. Afterwards, April 20, I find another note that this species was still taken, while the true spring salmon were in season. It reached 20 lbs. in weight."

At another time Mr. Gibbs writes: "The *skwowl* is taken 'fresh' (fresh run?) late in *January*, at Port Discovery and Hood's Canal," (Puget Sound.)

SALMO GAIRDNERI, Rich.

Gairdner's Salmon.

Syn.—*Salmo Gairdneri*, Rich., Fauna B. A., Fishes, 1836, 221.—DeKay, N. Y. Fauna, iv, 1842, 243.—Storer, Synop. 1846, 196.—Herbert, Suppl. to Fish and Fishing of the United States, 1850, 34. (Non *Fario Gairdneri*, Grd. Pr. A. N. Sc., Phil. viii, 1856, 219; *sive* Ibid, Pacific R. R. Reports, vol. vii; et Gen. Rep. Fishes; p. 313, Plate, LXXI, fig. 1—4.*)

? Queachts, Chinook.

Sp. Ch.—[Based on data given by Richardson, and on the examination of two dried skins in the Smithsonian collection.]—Profile of dorsal outline nearly straight; tail terminating in a *slightly semilunar outline*. Ventrals correspond to commencement of dorsal, and adipose to end of anal. Jaws fully armed with strong hooked teeth, except a small space in centre of upper jaw. Vomer armed with a double row for two-thirds of its anterior portion. Back of head and body, bluish grey; sides, ash grey; belly, white; caudal, spotted with oval dark spots; snout, rounded, (much more blunt than in *S. quinnat.*) Head, short and comparatively broad. Under fins light colored.

This salmon differs from the *S. quinnat* in the rounded not pointed muzzle, in lacking the sharp, toothless, triangular prolongation of the lower jaw, anterior to the teeth; in its shorter and thicker head, in being more slender, and in having the dorsal outline more straight. It also differs in its *slightly lunated* tail, in having the rows of teeth on the tongue *diverging* posteriorly, and having but 12 or 13 branchial rays. The teeth generally are smaller and of more uniform size than those of the *S. quinnat* of equal condition. The lips in the dried specimens do not seem as thick as in the last mentioned species, the teeth thus appearing nearer the outside margin.

Dr. Gairdner says that the only traces of variegated markings found on this fish are "a few faint spots at the root of the caudal." In the Smithsonian collection there are, at present, two dried skins which, upon careful comparison with Sir John Richardson's description of the present species, agree in so many respects, that we have no doubt of their identity with it. They were obtained recently from Mr. James Wayne, of Astoria, Oregon, and were caught at the same season of the year that Dr. Gairdner mentions that it is common in the Columbia. The only marked discrepancy, which I have found between these specimens and Dr. Gairdner's description, is in his statement as above, of the *absence of markings*. In Mr. Wayne's salmon the tails were *profusely spotted* with elliptical and roundish spots of a dark color. As before stated, I do not consider the occasional *absence* of spots is of specific value, but simply a mark of variety.

Richardson says: "In this species the gill-cover resembles that of *S. salar* still more strongly than that of the *quinnat* does, the shape of the sub-operculum, in particular, being precisely the same with that of *salar*. The teeth stand in bony sockets like those of the quinnat, but are scarcely so long. Those of the lower jaw and intermaxillaries are a little smaller than the lingual ones, and somewhat larger than the palatine or labial ones. The tongue contains six teeth on each side, the rows not parallel as in the *quinnat*, but diverging a little posteriorly. The pharyngeals are armed with small sharp teeth; the numbers of the teeth (excluding the small ones which fall off with the gums) are as follows: *Intermax.*, 4—4; *labials*, 21—21; *lower jaw*, 11—11; palate bones, 12—12; vomer, lost; tongue, 6—6. When the soft parts are

* Plate LXXI seems to be taken from the young of some species either not yet recognized, or hitherto undescribed. It is *possible* that the fish may have been a very young *S. Gairdneri;* unless, as has been suggested, the number of rows of vomerine teeth be either variable, according to age or individual development, a wide difference would seem to exist between Dr. Girard's specimen, which he includes under the genus *Fario*, (and therefore has but a *single* row of teeth on the vomer,) and the description given by Dr. Gairdner of the dental arrangement of the present species, which has a double row of teeth for two-thirds of the anterior portion of the vomer.

entirely removed, the projecting under edge of the articular piece of the lower jaw is acutely serrated, in which respect this species differs from all the others received from Dr. Gairdner. There are 64 vertebræ in the spine,"—(RICH. in F. B. A., p. 222.)

Dr. Gairdner says that this species ascends the Columbia in June, "in smaller numbers than the *quinnat*, in whose company it is taken. Its average weight is between six and seven pounds." The great difference in size is another strongly marked distinction between this species and the *quinnat*. Dr. Gairdner also gives the dimensions of a fish having an extreme length of 31 inches, in which the length from the snout to the anterior margin of the dorsal was 12 inches. In his measurements of a *S. quinnat* of 30 inches extreme length, the distance between the same points was 13 inches. According to this it seems that the dorsal fin in the *quinnat* is placed comparatively a little further behind.

The two dried skins examined by us are so much shrivelled that the relative distances between the fins cannot be acurately determined.

The *S. gairdneri* differs from the *paucidens** in having larger teeth, in attaining a much larger size, and in not having a *forked tail*.

In 1856 we noticed a salmon which had been caught at an Indian fishery on Green river near Puget Sound, which seemed to have been either a variety of the present species or nearly related to it. It was more slender than the *Towatl*, (*? quinnat*,) and although it had good flavor and seemed in excellent condition, its flesh was *white*. This fish was bright and silvery externally, and appeared to be fresh run from the sea. It was about 28 inches in length and quite slender.

The Puget Sound Indians take a salmon in summer which is known to the Skadgetts as the *yoo-mitch*, and to the bands speaking the Nisqually dialect as the *satsup*. This they consider to be the best of all the kinds of salmon which they catch. It commences to run up the fresh water streams about June 15, and continues ascending until about the middle or end of August. As the period of arrival of this is so much like that of the *gairdneri* on the Columbia, we are inclined to consider them identical, and regret exceedingly that we preserved no specimens for study and comparison. The flesh of the kind—whatever it may be—is of a beautiful salmon-red, and in general estimation for the table, is the favorite of both whites and Indians. When exhausted and emaciated from spawning, it is called, in common with several other species, *Yoke* or *Yoek*.

SALMO GIBBSII, Suckley.

Columbia Salmon Trout; Gibbs's Salmon.

SYN.—*Fario tsuppitch*, GRD. in Proc. Acad. N. Sc. Phil. viii, 218, 1856.—GRD. Rep. on Fishes, U. S. P. R. R. Surveys, 310, 1858. [Non *Salmo tsuppitch*, RICHARDSON.]

S. Gibbsii, SUCKLEY, Annals N. Y. Lyceum, 1858.

Black-spotted Salmon-trout, LEWIS & CLARK.

FIGURES.—The typical specimen of the present species is figured as *F. tsuppitch*, in the Pacific R. R. Reps., *Fishes*, Pl. LXIX.

SP. CH.—Body elongated, compressed, fusiform in profile; dorsal profile but slightly arched; snout rounded, the jaws sub-equal; maxillary gently curved, dilated posteriorly, and extending to a vertical line passing slightly behind the orbit; anterior margin of dorsal nearer the extremity of the snout than to the insertion of caudal fin; colors of the head and back, in the fresh specimen, rich dark olive green, profusely dotted with roundish black spots, the scales in certain lights showing bright silvery reflections; sides below the lateral line are usually unicolor, of a yellowish white; inferior fins unspotted; tail and upper fins yellowish olive, *profusely* spotted with round and oval spots of black, each spot being from one to two lines in

* This is, if we admit the *paucidens* to be a species, the characters of which are based on the description of an adult.

diameter, and completely isolated from the others, *not confluent* as in some other species; caudal fin moderately lunated, *not forked;* head small; teeth small, and very numerous, especially on the labials; length of the full grown adults rarely exceed 2 feet.

Hab.—The Columbia river and its larger affluents. The species is apparently not anadromous, but seems to remain in the fresh waters throughout the year.

The typical specimen upon which the foregoing description is based is a single skin contained in the Smithsonian collection, Catalogue No. 940, that of a female, obtained by the present describer at Fort Dalles, Oregon, April 5, 1855. The species is known to the Walla-Walla Indians as the *Shoo-shines*, and to the Wascos by the name of *Ic-kwan-eek.*

Mr. Girard, taking the specimen for the *S. tsuppitch* of Richardson, figured and described it as belonging to that species. Upon his attention being called to several marked discrepancies between the account given by Sir John Richardson of the *S. tsuppitch* and certain characteristics of the specimen from Fort Dalles, he at once coincided with me in considering the two species distinct. According to Richardson, the *S. tsuppitch* has the dorsal, anal, and caudal fins *destitute of spots*, and the tail *forked.* The present fish, on the contrary, has the tail but *moderately lunated* at its extremity; and the dorsal fins and tail are *profusely spotted with black.* These prominent differences, besides many others less striking, have been deemed sufficient to settle the question of non-identity of the two species; and as no recorded description seems to refer to the present salmon, it is now presented as a new species under the name *Salmo Gibbsii*, in honor of my valued friend George Gibbs, esq., geologist to the Northwestern Boundary Commission, and for many years a resident of Washington Territory. To Mr. Gibbs more than to any other individual am I indebted for rare specimens in all branches of natural history, and especially for information, aid, advice, and encouragement while endeavoring to elucidate the history of the Salmonidæ of the northwest coast.

This salmon is obtained during the winter and early spring months at Fort Dalles, Oregon. It is also found during the summer in the Yakima, John Day's, and other rivers, emptying into the Columbia. In the fall of 1855 I obtained a fine specimen of a fish resembling this species from Boisé river, one of the tributaries of Lewis's Fork. Its flesh is good for the table, and the size renders it convenient for culinary purposes, as it rarely exceeds five or six pounds. Most individuals have a broad reddish band or blueish along the sides, commencing at the middle of the opercula, and extending to near the base of the tail. This band is apparently subcutaneous, and may exist only in individuals not in prime condition.

Dr. Cooper says: "This fine fish, known as mountain and salmon trout, is quite plentiful in the rivers east of the Cascades in autumn, when we saw many of them caught by the Indians. They did not bite at the hook, though I caught two other species very easily, using grasshoppers as bait. These were all lost, with other fish obtained there, on account of the want of good alcohol, as before mentioned. Though some of our hunters said that this fish is confined to the east side of the mountains, I saw one caught in Puget Sound in March, 1855, which I thought precisely the same. Its peculiar shape would be hardly mistakeable."

Dr. Cooper's authority for the existence of this salmon at Puget Sound is undoubtedly good; yet, nevertheless, I am surprised that, during a much longer residence in that vicinity, I never noticed this species, although I paid especial attention to the *Salmonidæ.*

Description of a female salmon caught September 22, 1853, *on a branch of the Yakima river, Washington Territory, by George Gibbs, esq.*

	Inches.		Inches.
Total length	24	To anal fin	17
Tip of nose to first dorsal fin	10½	Base of anal fin	2
Length of base of dorsal fin	2½	To base of tail	22
Nose to adipose fin	17¾	Girth before dorsal fin	10½
Length of adipose	½	Girth before tail	4½
Nose to root of tail	21¼	Length of head	4
End of lower jaw to pectoral fin	4¼	Circumference of head	9
Base of pectoral fin	¾	From eye to eye over back of head	2
To abdominal fin	12	Length from orbit to nose	1½

Form slender, rounded; back and head dark olive, with black spots; sides silver gray, with purplish and green lights; belly silver white; Iris pale gold; head short, thick; jaws equal length; spines in dorsal fin 14 inches; a distinct lateral line; eggs nearly matured.

A hunter told Mr. Gibbs that this fish is found altogether above the Cascades of the Columbia, and that they grow to one-third larger size.

SALMO CONFLUENTUS, Suckley.

Typical specimen in Smithsonian collection, Fishes, No. 1135.

Syn.—*Salmo confluentus*, Suckley, Ann. N. Y. Lyc., December, 1858.

Sp. Ch.—Male: Form, stout; dorsal profile rising to a point just anterior to dorsal fin, then rapidly tapering to tail; dorsal, adipose and caudal fins profusely spotted; caudal broad and moderately lunated; adipose opposite anal, and much elongated; spots along the back and sides, generally linear, or V-shaped; others irregular, (but few round,) and covering from two to five scales; the most common cover three scales, and are about half an inch in length; fins on under parts unspotted, as also all parts beneath the lateral line.

A triangular bare projection of the chin anterior to the front teeth, as in the *S. quinnat;* scales scarcely as large as those of *S. truncatus*. Teeth of irregular size, and not so closely disposed on the arms of the jaws and labels as in *S. gairdneri*; middle of dorsal fin nearly opposite a point at the middle of the total length.

Differs from *S. quinnat* in having the tail but moderately lunated at the extremity, that of the latter being so deeply cut out as to be almost forked.

Hab.—Northwest coast of America, entering the rivers for spawning purposes during the spring, and continuing throughout the summer.

The typical specimen, from which the foregoing description was taken, is a dried skin, now in the Smithsonian collection, procured by the present describer from the Puyallup river, near Fort Steilacoom, Washington Territory, September 27, 1856, and called by the Indians who saw it *To-oh-odlt.* The Indians seem to apply the same name to another species of salmon, as I have heard of a gigantic kind, only found in certain localities, which is also called *To-oh-odlt.* The colors of the specimen procured—an adult male—were evidently much changed by long residence in fresh water, and the exhaustion consequent upon procreation. This was rendered evident by the altered appearance of the jaws and teeth, as well as by the lean condition of the fish. The colors, as they appeared, were as follows: Upper parts, dingy olive-green, profusely spotted with diagonal and confluent spots of dark brown, or black. Lower parts dingy yellowish white, unspotted, but tinged with a reddish band along the flanks. Dorsal, adipose, and caudal fins dark yellowish green, spotted profusely with dark brown or black.

The examination of the dried skin shows branchial rays 13.14, as near as can be counted.

The condition of the specimen is such that no reliable statement can be given of the number of fin-rays. Length of skin, 29 inches. Insertion of anal fin about $2\frac{3}{4}$ inches in length. A single tooth on the anterior portion of the vomer. Intermaxillary projection strongly decurved in the dried skin.

George Gibbs, esq., obtained the following information regarding this salmon from Mr. John Swan, one of the proprietors of the fishery at the mouth of the Puyallup:

"*Towatl.*—These come every fall, with the *Shonquid. (S. Scouleri.)* They are a speckled salmon, with small black spots, more distinct than those of the *Schedad, (Satsup?)* The scales are of a duller hue. All the others have bright scales when in salt water, but change on entering the fresh. These last *are always dull.* They are the largest of the Sound salmon, and run twenty to twenty-five pounds, averaging fifteen. They differ from any of the rest."

NOTE.—An alcoholic specimen in the Smithsonian collection, marked 1136, is apparently a female, of some nearly allied species, from the same general region of country. The head and skin are preserved, the flesh having been removed. In general appearance it much resembles the present species, but the spots are more numerous, and *round*, not confluent.

SALMO SCOULERI, Rich.

Hooked-nosed Salmon; Fall Salmon.

SYN.—*Salmo scouleri*, RICH Faun. Bor. Amer. III, 1836, 158, and 223; pl. xcvii.—DEKAY, N. Y. Fauna III, 1842. GIRARD, Gen. Rep. Fishes, p. 305.—HERBERT, Fish and Fishing, &c., Suppl. 1850, 37.

Salar scouleri, VALENC. in *Cuv.* and *Val.* Hist Nat. Poiss. XXI, 1848, 345, 242.—STORER, Synops. 1846, 194.—GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 217.

? Salmo lycaodon, PALLAS, Zoog. Ros. Asiat.

FIGURE.—RICH, F. B. A. III, 1836; pl. 93.

SP. CH.—*Male.*—Profile much arched, the convexity rising from nape to dorsal fin. The body at that point is thick, tapering from thence to the caudal. Intermaxillary prolongation strongly decurved, and armed with large hooked teeth. Under jaw armed with a dilated and slightly incurved knob, similarly provided with strong teeth. The teeth on the sides of both jaws are strong, and very irregular in size or disposition, and extend almost to the angle of the commissure. Teeth on the vomer, present or absent, varying in this respect in different specimens. Caudal fin moderately lunated, the degree varying according to age.

Colors.—In recent specimens fresh from the sea we find a silvery lustre; not, however, as strongly marked as in the *S. gairdneri, S. quinnat*, and other species. The ground color of the back is lead color, and that of the belly white, or yellowish white. The back and sides are unspotted.

Female.—The fresh run female differs in having symmetrical jaws, destitute of elongated intermaxillary, or of the incurved knob on the lower jaw.

Richardson gives the branchial rays as 12–13. Those of the seven specimens in the Smithsonian collection have from 12 to 14 on either side. Ventral appendages long.

Richardson says: "The *palatine* and *vomerine* teeth equal the posterior ones on the lower jaw in size, and are implanted in double rows; there are none on the anterior knob of the vomer." Of the seven specimens we have, four have no *vomerine* teeth, two of the others (females) have a very minute single tooth about the middle of the bone, and the other has a row of rather strong teeth upon it. The latter having dried with the mouth closed, it is difficult to ascertain their exact number or arrangement.

The heads of the males which are contained in the collection have a membrane stretched across the roof of the mouth in its anterior third; above it there is a cavity opening posteriorly and terminating anteriorly in the maxillary protuberance, forming a *cul de sac.*

In speaking of the prolongation and incurvature of the extremities of the upper and lower jaws, Sir John Richardson says that they are "said to be peculiar to the male *after* spawning."

From my own observation while stationed on the northwest coast, and from information received from others, I feel justified in pronouncing this an error, as I have seen the adult male while *fresh run* and *silvery*, with these remarkable characteristics strongly developed months—certainly weeks—*before* the spawning season. It may be, however, as suggested by Dr. Cooper, that old males that have in previous seasons entered the rivers for spawning purposes, having afterwards recuperated in the salt water, do return with this peculiar formation of the jaws and mouth. This subject has, unfortunately, as yet, been but little examined. I was frequently told by fishermen, Indians, and others, that the *females* lack these peculiarities, thus confirming Dr. Scouler's statement. If such is the case it will account for Dr. Cooper's remark, that "the amount of hooking of the nose seemed very much independent of size or season." In my field-notes regarding this species I find the following remarks: "The *skowitz* of the Nisquallies, or hooked-nosed salmon of the *whites*, is a very common kind. *Adult males* of this species have always, even when *in excellent condition and fresh run from the sea, a decurved cartilaginous process from the symphisis of the upper maxilla*, behind which the point of the lower jaw is received. The females (at least when fresh run) are *without* this appendage. In the absence of the hooked snout in the females this species is like the *S. hamatus*, as described in the annexed quotation. The strong teeth found on the intermaxillary protuberance of the male will afford a subject of comparison for the field-observer, when comparing the present species with the worn-out males of the *S. quinnat.*"

In the Fauna B. Americana, Part III, p. 141, Sir John Richardson makes the following remarks upon the Lapland *Salmo hamatus*, which are interesting in the present connexion because thought by him to come nearest to the *S. scouleri*, (see foot note to page 160 of the same volume;) he says: "As I have not seen an authentic specimen of the *Salmo hamatus* of the Régne Animal, I am unable decidedly to controvert M. Agassiz' opinion that it is merely a nominal species, founded upon a change of form which takes place in the old males of *Salmo salar;* but the evidence I have gleaned from authors induces me to follow Cuvier in considering it to be quite distinct." * * * * * "The following passage, quoted from the Lachesis Lapponica, tends to prove not only the northern range of the *Salmo hamatus*, but also that the *hook of the lower jaw is developed even in young fish;* but the old males of the common salmon that we usually see in the Nith, and some other British rivers, have a comparitively slight hook. 'Here,' in Lulean Lapland, 'the common salmon is found with the under jaw occasionally hooked. I inquired whether this *variety* was esteemed a distinct species, or whether a difference arising from age; both of which questions I was answered in the negative. I was shown a fish of the *smallest size*, which had in proportion *as large a hook to the lower jaw as the largest.* I inquired whether the hooked salmon were furnished with roe or milt. I was answered that they had always *milt.* On opening seven of them I found this verified; whereas four salmon which were not hooked had roes. The hooked or male salmon is so called because the point of its lower jaw is bent inward and has a taper form, resembling a finger, while, on the contrary, the upper one is formed with a cavity to receive the point, embracing it like a sheath for about half its length.'"

When worn out, all specimens have the hooked snout, but in the female I judge that this is only owing to the absorption of the fatty cushions along the upper jaw, whereas in the *male* the original characteristic is exaggerated by emaciation. The *skowitz* is a very abundant species, and affords, in fact, the principal salmon harvest to the natives, who dry vast quantities for winter consumption. This species commences to run up the fresh water streams emptying into

Puget Sound in September, and continues arriving until near Christmas. During the months of January, February, and March, they are found abundantly in small shallow brooks and streams tributary to the larger rivers. At this late period they are much emaciated, owing to their exhaustion from breeding and from months of abstinence, they being said not to eat after entering fresh water; and their flesh, when cooked, is rank and ill-flavored. During the month of April they suddenly disappear, probably returning by the spring floods to salt water, although the Indians say that but few return to the sea.—(See General Remarks.) The flesh of this fish, when fresh from salt water, the individual being fat and in good condition, is of a very pale yellowish "salmon" color. This color soon changes into pinkish yellow, and, when the fish is worn out, to yellowish white.

Under the head of *S. Scouleri* Dr. Cooper says:

"I observed, in overhauling several hundreds of these salmon at different times, that they varied exceedingly in the form of their upper jaw and the size of their teeth, and came to the conclusion that those commonly distinguished as the 'dogmouth' were only very old specimens of the same. The amount of hooking of the nose seemed very much independent of size or season, but was found of every shade and degree in fish caught at the same time.

"None, however, except those apparently full grown, showed it at all, and after attaining a length of four feet they show no other sign of increased age.

"We found the same varieties in size and in the shape of the nose in salmon caught 350 miles up the Columbia, at the mouth of the 'Pisquouse' river, though, as before mentioned, those seen in the Okanagan were all of smaller size."

Mr. George Gibbs, in speaking of the skowitz, ("skowquid,") says:

"This is the salmon that runs in such immense schools in the sound, and is caught and salted there. The head of this variety is narrower than that of the former, and it is taken in seines. Messrs. Swan & Riley have taken as many as 3,000 skowquid at one haul. The *males* have a somewhat crooked head and large teeth, the females fine wiry teeth. They last until the latter part of December, and are most numerous in the years when they arrive earliest."

A fish said by the Indians to be much like the skowitz, but fatter and of finer flavor, enters the sound in company with the latter species, but does not pass up further than Whidby's island. It is called by the Skadgetts *sky* or *skai*.

Some remarks on the economic value of the *S. Scouleri*, compared with that of other kinds of western salmon, are included in the General Remarks of the present report.

After carefully reading the notes by Dr. Scouler on the salmon of Observatory inlet, contained in Richardson's work, I am convinced that the salmon there obtained is identical with the *skowitz* found on Puget Sound, and nearly related to, if not identical with, Dr. Gairdner's "*ekewan*." Some differences exist, however, between Dr. Gairdner's statements regarding the latter fish and the information which I obtained concerning the *skowitz*. He says that the *ekewan* "averages thirty pounds in weight." Mr. Gibbs says "the *skowitz* averages six pounds." My own impression is, that the *male* skowitz will average twelve pounds, and the females much less.

The study of this particular species, or perhaps *group*, of salmon presents many points requiring further investigation. Although, as Dr. Scouler suggests, the *S. Scouleri* "comes nearest to the *gorbuscha* of Kamschatka," I do not by any means think them identical. If the *gorbuscha* is the same as any of our species frequenting the waters of Puget Sound or the Columbia, I think it will be found identical with the *Salmo proteus* of Pallas, described in this

report, a species known, *par excellence*, to the inhabitants on the northwest coast as the "*hump-backed salmon*," which enters the rivers on alternate years. The *S. Scouleri* has a tendency towards a hump, and might be called the "hump-backed salmon" if we had not a species having that character so much more exaggerated. Besides differences in this respect, there are other strong ones in the number and arrangement of the teeth, size of scales, color, total length of fish, &c.* The *gorbuscha*, according to Pennant, never exceeds a foot and a half in length.

Dr. Scouler, *in lit.* to Sir John Richardson, says of this salmon: "This arm of the sea [Observatory inlet] was frequented at the time by such myriads of the salmon that a stone could not have reached the bottom without touching several individuals—their abundance surpassing the efforts of the imagination to conceive. The little brook that empties itself into the inlet was swarming with the fish ascending to spawn, and in the course of about two hours we killed sixty with boarding pikes. The hump before the dorsal fin consists of fat, and appears to be peculiar to the males, who acquire it after the spawning season, when their snouts become elongated and arched."

From the wording of the last sentence I am inclined to think that *two distinct kinds of salmon were entering the rivers at the same time;* these being the *S. Scouleri*, of which he sent a specimen which was described and figured by Sir John Richardson, (from which description and figure there is no difficulty in proving its identity with the *skowitz* of Puget Sound,) and the hump-backed salmon or *huddo*. In Puget Sound the two species are found arriving at the same season and months—the *huddo*, however, only coming in alternate years. Perhaps Dr. Scouler, in confounding the two species as one, made notes on both, part of which apply only to the hump-backed species; and having preserved specimens of the *S. Scouleri* alone, confusion was created not only in Sir J. Richardson's pages, but in the minds of others studying the subject. Confusion, however, in regard to our northwestern salmon is perfectly pardonable, as we ourselves can testify.

Dr. Scouler again says, [this time probably referring to the true *S. Scouleri*:] "According to the best of my remembrance the color of the belly is white, inclined to yellow, and the back is of a bluish leaden color. Nothing can be more different than the appearance of the two sexes during the spawning season. The female is round and beautiful, *with the jaws of equal length;* while the male is compressed laterally, and has a *long, arched snout with powerful teeth.*" [The *italics* are our own.] Dr. Scouler again remarks: "I am unable to say whether any return to the sea or not; or whether the large teeth drop, and the incurvated snout returns to its former dimensions. The females *want* the large teeth, and so do the males before spawing, at least I saw none with large teeth in the Columbia in April or May. We left that river in June, and did not return until September."

The teeth of all salmon *apparently* grow as the fish becomes emaciated. This is caused much by the shrinking of the "gums," produced by the absorption of all superfluous fat. The Doctor evidently again confounds distinct species, mistaking the *spring* kinds (*S. quinnat* and *S. Gairdneri*) for this species. At the time he was in the Columbia (May and June) there were no individuals of the present species to be found. September, the month in which be returned, is the time when the *S. Scouleri* comes from the sea in vast numbers. The diagnostic marks between those species are well defined and cannot be produced by variations in condition.

* The subject of the identity of the *gorbuscha*, and the hump-backed salmon of Puget Sound is spoken of more in detail, under the head of *Salmo proteus*.

Of the present species we have identified seven specimens now in the Smithsonian collection. Several of these are perfect skins, obtained by the writer from Puget Sound; others are simply the *heads* of individuals received from different sources. The figure given by Richardson in the latter part of his work on *fishes*, in the Fauna Boreali Americana, is an excellent representation of the adult male of this species.

SALMO PROTEUS, Pallas.

Hump-backed Salmon

Specimen in Smithsonian collection, Fishes, No. 1132.

SYN —*Salmo proteus*, PALLAS, Zoog. Ros. Asiat. III, 376 —VALENC. in *Cuv. & Valenc.* Hist. Nat. Poissons, XXI, 1848, 360.
Salmo gibber, SUCKLEY, Ann. N. Y. Lyceum Nat. Hist Dec. 1858.
Gorbuscha of KAMTSCHATKA; *Hunnun* of the LUMMIES; *Huddoh* of the NISQUALLIES.

SP. CH.—*Male:* Dorsal profile much more arched than in *S. Scouleri*, RICH. After entering fresh water, anadipose hump becomes strikingly apparent, its greatest prominence being nearly opposite a point midway on a line drawn from the eye to the anterior margin of the base of the dorsal fin; intermaxillary projection curved strongly downwards as in *S Scouleri;* jaws long, as in latter, the the lower terminated by a dilated knob, (as in several other species of the genus,) which is armed with four or five strong, sharp teeth on each side; labials and limbs of the lower jaw closely set with very fine, sharp teeth' finer and more numerous than those of the *S. Scouleri;* vomerine and palatine teeth much larger than those of the labials; those on the vomer disposed in a single row on its anterior portion; tail rather strongly lunated, and profusely dotted with elongated oval dark spots; the other fins usually unspotted, adipose rather elongated; scales much smaller than those of the *S. Scouleri*, those of the back are much smaller than those below the lateral line.

Hab.—The Northern Pacific coasts of Asiatic Russia and America; Puget Sound.

The colors of this, like those of other species, vary much after the fish enters fresh water. Those caught in salt water are more or less silvery. After entering fresh rivers the color of the upper parts become of a dirty grayish yellow; below white, blotched with yellow. These colors, however, vary considerably in different individuals.

Dr. Kennerly, who obtained a specimen of the present species at Anaimo, Vancouver's Island, September 22, 1857, remarks in his notes that it was a male, having the "head greenish yellow, clouded with black; opercula dull pinkish. Upper parts dirty grayish and yellow; under parts white, blotched with yellow; ventral and pectoral fins grass green; dorsal, ultramarine blue and green. Tail blotched (spotted?) with black."

The teeth on the limbs of the lower jaw of this specimen extend backwards only half their length. Tongue apparently destitute of teeth. Branchial rays, 11. 11. Total length, 25½ inches. Length of head, 7 inches. Depth of hump, 7 inches.

The Indians say that this salmon is usually quite fat, and that as food they like it very much. They state that it enters Puget Sound and the rivers on alternate years, it being very rare for even a single individual to be caught in the intermediate season. The "run" of the *huddoh* in its regular years is large, coming in vast numbers, comparing favorably, in this respect, with the *satsup*, *skowitz*, or *Tl-hwhai*. According to the natives of our coast, the hunch-back *never* returns to the sea after spawning, but die in fresh water. In this respect they again agree with the Kamtschatka fish.—(See beyond.)

Mr. George Gibbs says: "*Hunnoh* come only every second year. The Indians say that when they do come there are always great abundance of salmon berries and other berries, and the summers are very warm. In the summer of 1853, when Captain McClellan's party were in the Yakima country, berries were very abundant and salmon scarce, while the reverse was the case in 1854. The *hunnoh* arrive early in August, and last a month. The female is like the others. The males have a large hump on the back, and an immense head; flesh of the males white, females red. Upper jaw shuts over the under. The males have large hooked

teeth; color of back greenish, beneath dirty white. This fish is poor eating. There is no apparent difference between the female of this and the *stoaquid* The average weight is only 5 or 6 pounds."

Concerning the Kamtschatka salmon, Sir John Richardson, in a foot-note, gives the following quotation from Pennant's Arct. Zool., Intr., p. cxxv : "The *gorbuscha*, or hunch-back, ascends the rivers in July. In form it resembles the grayling; *never exceeds a foot and a half in length;* is of a silvery color and unspotted; the tail forked; the flesh white. After it has been some time in fresh water it changes its shape (the male especially) in a most surprising manner. The jaws and teeth grow prodigiously long, especially the upper, which is at first shortest, but soon shoots beyond the under, and grows crooked downwards; the body becomes emaciated, and the meat bad; but what is most characteristic, an enormous bunch rises just before the first dorsal fin, to which it owes its name. Its flesh is bad, so that this fish falls to the share of the dogs. Rays: D. 14–0 ; P. 15: V, 11, A, 18."

Pallas, in describing the *gorbuscha, (S. proteus,)* says that the body is unspotted and silvery; the "beak" conical; anal fin with 14 rays; caudal forked, spotted. It enters some of the Kamtschatkan rivers, avoiding others, leaving the sea about the middle of July. It ascends the rivers in such shoals that when the weather is calm the water is so agitated by the fish as to appear disturbed by waves, and they can then be readily taken with the hand. Their form becomes monstrous, the hump appearing, and the jaws become so curved that the mouth, which had been hitherto symmetrical, cannot be closed or receive food. After the month of August has been passed in generation, *all of these fishes perish in the rivers* and strew the banks with their dead bodies, none returning alive to the sea. He adds that they appear to be on the opposite shores of America, quoting Vancouver, who says that he there found a salmon with a hooked beak in *both sexes*, and a hump back in the male. He then gives a description of a particular individual of the species, having a length of 2 feet, and weight of 4 or 5 pounds. The teeth, which in the sea were soft and rudimentary, grow out, and the colors change greatly before death, becoming first blue, then livid, afterwards chestnut, and, from the loss of blood, the sides become stained with various morbid colors, as if it had been bruised. The fish in the sea is very active, but after entering fresh water becomes lean, inactive, and unsavory. The females are smaller and not numerous, being, when compared to the males, as one to twenty. The muzzles of the fresh run males are attenuated in a cylindrical form; the jaws equal, but finally much hooked. Upper jaws with a somewhat interrupted row of teeth on each side, of which all the anterior are strong and hooked; those posteriorly on the narrow maxillary plates awl-shaped, straight, and very small. Teeth on the lower jaw are not continuous behind the middle of its limbs; they are somewhat unequal, and are smaller than the teeth of the apex, which are large and hooked. Palate with *a row of a few teeth along the middle*, and another on each side, *Br. rays* 11 or 12. Body above covered with very small scales, those below the lateral line being larger. Adipose dorsal fin elongated.

In the foregoing particulars the description applies admirably to the characters possessed by the two specimens in the Smithsonian collection, sent by Dr. Kennerly. The description of the jaws and the dental arrangement exactly applies, with the exception that in one of the Puget Sound specimens the vomerine teeth are wanting.

Pallas adds that the lateral line is very straight, and placed rather near the back. It is apparently formed by the fusion of small scales; but upon close examination this appearance is found to result from the presence of hair-like sculpture on the scales. Dorsal fin anterior to

the ventrals; rays 12, the two anterior simple. Adipose nearly opposite to the posterior rays of the anal. Pectorals with 15 rays; ventrals with 10. Anal stout, with 14 or 15 rays. Caudal marked with dark oval spots, more distinct in the smaller fish.

From the preceding account I have but little doubt that the species found with us is the same as that of Pallas, and have accordingly adopted his synonym. It is not unlikely that more of our species may prove identical with those of Kamtschatka. This theory is not opposed by the physical conformation of the two continents, which, approaching each other so closely at the north, are also nearly joined at a comparatively southern point by the chain of islands formerly the Aleutian archipelago.

The present species may be distinguished from the *S. Scouleri* by its smaller size, the prominent hump in the males, its smaller scales, and the fine regular teeth along the sides of the jaws. The teeth of the *S. Scouleri* are scattered irregularly, and are generally large; but by no means uniform in size along the sides of the maxillaries.—T.

SALMO CANIS, Suckley.

Dog Salmon; Spotted Salmon.

Syn —*Salmo canis*, Suckley, Ann. N. Y. Lyc. Dec. 1858.—*Lekai*, Chinook jargon; *Tlh-whai*, Nisquallies.

Sp. Ch.—*Male:* Gape line of mouth much arched; intermaxillary protuberance well marked, decurved; fleshy prolongation beyond chin rather thick; jaws fully provided with large strong teeth, so large as to give rise to the name of dog salmon; dorsal outline moderately arched; body compressed laterally, but rather deep; weight of full grown adult rarely exceeds 12 or 14 pounds. Colors, upon first arrival into fresh water, of a dingy greenish olive on the back, fading into brassy yellow on the sides, and to dingy yellowish white on the belly; sides more or less maculated with large alternate patches of dingy green and purplish red; flesh pale, and of inferior quality; upper fins and tail dark.

Hab.—Northwest coast of America. Enters the streams along Puget Sound in great numbers in autumn.

The spotted or lekai salmon enters the rivers of Puget Sound in great numbers every autumn, generally appearing between September 15 and October 10. They come in vast numbers, and arrive so simultaneously as to seem to be in shoals, though, probably, that is occasioned not by a gregarious character, but by the same instinct causing all the individuals to leave the sea at about the same period for the purpose of procreation.

They are not a finely flavored fish, even when "fresh run," many individuals being at that time in bad condition—a condition unusual among salmon just quitting salt water. After a short residence in fresh water all become poor and unsavory, and some even intolerably rank. Upon first arrival the sickly fish are readily distinguished by the natives by their colors, the best fish being of a leaden olive or dingy green on the back, and a yellowish white along the belly; the poor ones are of various shades and tints of dingy green and yellow, more or less maculated on the sides with purplish and black blotches. They enter, by preference, the smaller streams.

Owing to the large jaws and long ferocious-looking teeth of the species they have obtained from the whites the name of dog-salmon. Vast numbers are taken by the Indians with spears, gaff hooks, weirs, &c., and dried for winter use. Upon their arrival in September and October their roes are nearly mature.

It is interesting to witness their persevering efforts to run up shallows, and in overcoming insurmountable obstacles, even running out of water *upon the shores*, in their blind eagerness to surmount impossibilities and reach the headwaters of the stream to deposit their spawn. In endeavoring to ascend high falls, and in passing through rocky, violent passages, their snouts

and bodies become much bruised and injured, giving rise to sores and ulcerations. The fins become much worn also. The impoverished fish have hooked snouts and pale whitish flesh. At no time is it seen with the bright salmon red flesh common to other kinds; but on the first arrival, when in good order, they are found with flesh which, when cooked, has a pinkish buff color, and is not, in my estimation, bad.

Like several other species of salmon they are very regular in the periodical arrivals at the mouths of the rivers. In 1856 they arrived in the vicinity of Fort Steilacoom on the 3d of October, and by the 7th were in such vast numbers that a small boy, with a pole armed with a gaff hook, could readily take one or two hundred pounds weight in an hour.

The Nisqually Indians say that these salmon, although entering fresh water later than the *skowitz*, (*S. Scouleri*,) return earlier, their stay being shorter. They state also that the greater number go back to the sea, after spawning, more than those of any other species of large salmon; the *hunch-back* all dying, and but few of the *skowitz* surviving.

Mr. Gibbs says of this species: "The common dog-salmon is preferred by the Indians for drying, because there is but little fat upon it. It has a hooked nose, and very large hooked teeth, both increasing with age. When "fresh-run" the meat of the female is red, but soon becomes white. The Indians do not dry them until they have been in fresh water some time, and have lost what little fat they had. They arrive about October 1, and last until late in the winter. The Indians split them very thin, take out the back bone, and dry all parts."

3. SALMO SPECTABILIS, Grd.

Red-Spotted Salmon Trout.

SPEC. CHAR.—Body sub-fusiform in profile, very much compressed, the head forming about the fourth of the total length. Maxillary bone curved, extending to a vertical line passing somewhat posteriorly to the entire orbit. Anterior margin of dorsal fin a little nearer the extremity of the snout than the base of the caudal. Brownish gray above; silvery beneath. Dorsal region and upper portion of the flanks spread over with light spots; those on the sides bright red, as in *S. fontinalis*.

SYN.—*Salmo spectabilis*, GRD in Proc. Acad. Nat. Sc. Phila. VIII, 1856, 218.—IBID. Pacific R. R. Reports, *Fishes*, p. 307.

Red spotted salmon trout, OREGON SETTLERS; *pussutch*, NISQUALLY; *commahmah*, CLALLAM.

Dr. Girard says: "The only specimen which we have before us being in a rather precarious state of keeping, our description of the species must, of course, remain incomplete. All the fins being broken off from their very bases, the length and shape of the caudal could not be ascertained. The abdomen itself is ruptured, and all the viscera are lost."

As Dr. Girard suggests, the colors of this fish were very much altered by the preservative. The specimen upon which the specific characters of the species were based is, as yet, alone in the Smithsonian collection. It was obtained by me, in the year 1854, at Fort Dalles, Oregon, (*not* from the St. Mary's Mission, as stated in the general report,) where the species is not uncommon.* It is said by the inhabitants to be more partial to particular streams, and to be quite plentiful in a small rivulet called Dog river, which, arising on the north side of Mount Hood, empties into the Columbia about ten miles below Fort Dalles. It comes late in the summer, and for this reason I suppose it to be *anadromous*. This is certainly the case if it is identical with the red-spotted salmon trout so abundant in the bays and rivers of Puget Sound in autumn, which is known to the Nisqually Indians as the pussutch, and is taken in moderate numbers throughout the summer, and in immense quantities in autumn. The colors of the species are, as near as I can remember, as follows: Back and upper parts pale brownish olive;

* Many fine specimens of the pussutch were obtained by me at Fort Steilacoom, and forwarded to Washington, but never reached their destination.

sides more or less silvery; belly white, or yellowish white; back, top of head, and upper fins spotted with large spots of a cream color. Spots on the sides *bright red*, as in the *S. fontinalis*.

As early as the first of June this beautiful fish is found running up the Nisqually, Dwamish, and other rivers emptying into Puget Sound. They are taken sparingly from those waters until October, when they enter the mouths of the rivers in vast numbers, and are taken by hook and line, nets, traps, &c., until *near Christmas*. The largest individual of this species that I saw was about two feet in length, and was taken in the Dwamish river, in June, 1856. The individuals caught late in the autumn average about 14 or 15 inches in length, and seem generally more slender than the summer fish, although they are in equal flavor and condition for the table. In my opinion they exceed both the salmon and brook trout in delicious table qualities, as they also certainly exceed both in *beauty*. The flesh, when cooked, is of a delicate salmon hue, that of the autumn fish being a little paler. They are in general more slender in proportion to their length than either the true trout or salmon. I obtained a very handsome specimen of the *pussutch* which was caught in Green river, Washington Territory, 35 miles from salt water, about the middle of June, 1856. Upon it were two rows of rose-colored spots *below the lateral line*. They were generally about two and a half lines in diameter. Above the line there were, to the dorsal median, several nearly parallel rows of the same sized spots of a yellowish white color. The jaws of this fish were well provided with strong, sharp teeth. The little Indian boys catch great numbers of this species with hook and line. They use salmon roe principally for bait. I think that early in the season an artificial fly would answer well, and very much regret that the hopelessly fractured condition of my only fly-rod prevented my testing the question. I have heard it said that "salmon trout," answering to the description of this fish, are found in the waters of California. Upon conversing with Dr. W. O. Ayres, well known as an ichthyologist, and for some years a resident of San Francisco, he informed me that he had not seen the species in that State. Perhaps the fish is only caught in the fresh water streams some distance from San Francisco; or perhaps the species is really not found in California at all. The accounts of non-scientific describers are very unreliable, and on the Pacific coast, especially, there is great confusion among fishermen as to vulgar synonyms, brook trout, salmon trout, and salmon, being terms indiscriminately used. Besides these sources of confusion, there are in the northwest waters, perhaps, two well marked species of red-spotted salmon trout, which are entirely different from the species under consideration. One of these was observed by Mr. George Gibbs, esq., (geologist to the western division of the north Pacific railroad survey and exploration,) in the Yakima valley. It was about two feet in length, and may have been merely a large individual of the present species.

In Lake Pend d'Oreille, a sheet of water formed in the second chain of the Rocky mountains by a dilatation of the Clark river, of much the same size, shape, and general character, as Lake Geneva, in Switzerland, (from the lower end of which the Rhone escapes in a similar manner,) I have seen a very handsome species of red-spotted lake trout. The spots along the flanks are of the size of large peas, and are of a beautiful rose color. The length of the adult fish will average 20 inches. Its form is slender, and the dorsal profile but slightly arched.

SALMO AURORA, Grd.

Plate LXVIII.

"Sp. Ch.—Body fusiform, compressed; head forming the fourth of the total length, caudal fin excluded. Upper jaw longest. Maxillary gently undulating; its posterior extremity extending to a vertical line passing considerably behind the

entire orbit. Anterior margin of dorsal fin equidistant between the tip of the snout and the base of the caudal. Ground color grayish silvery above; sides and belly yellowish orange; dorsal fin spotted."—GIRARD.

SYN.—*Fario aurora*, GRD. in Proc. Acad. Nat Sc. Philad. VIII, 1856, 218.—IBID. Gen. Rep *Fishes*, 1858, 308.

Salmo aurora, GRD. MS.

?? *Red-char*, LEWIS & CLARK.

Two specimens of salmon, upon which Dr. Girard based the description of the present species, were obtained, in 1854, by Lieutenant Trowbridge, United States army, at Astoria, near the mouth of the Columbia. From the appearance of these fish I am inclined to the belief that they are immature, being the young of a species as yet unknown in the adult state. A full description of the specimens is contained in the general report on the fishes, P. R. R. Reports, volume X.

Dr. Girard has placed the present species under the genus *Fario*, (Valenc.,) the characters of which are appended in a foot-note.*

SALMO CLARKII, Rich.

Clark's Salmon.

SYN.—*Salmo Clarkii*, RICH. F. B. A. III, 1836, 224.—STORER, Synop. 1846, 197.—HERBERT, Fish and Fishing of the U. S. Suppl. 1850, 40. (*Non Salmo Clarkii*, GRD.)

SP. CH.—(Drawn from Richardson's description and Dr. Gairdner's notes.) Dorsal profile nearly straight. Ventrals opposite to the middle of first dorsal. Fissure of mouth oblique. Extremity of caudal nearly even. Both jaws armed with strong hooked teeth, a single row on each palate bone, and a double row on the anterior half of the vomer and on the tongue. The teeth are long, slender, and acute. Lingual teeth longest and most curved. An oblong plate on the isthmus which unites the lower ends of the bronchial arches, rough, with very minute teeth. Sixty-six vertebrae in the spinal column.

The colors of the species, as given by Dr. Gairdner, are not retained in the foregoing list of specific characters, as from the marked existence of large red and purplish patches we infer that the specimens described were not in prime condition. Dr. Gairdner says: "Back generally brownish purple-red, passing on the sides into ash gray, and into reddish white on the belly. Large patches of dark purplish red on the back. Dorsals and base of the caudal ash gray; end of caudal pansy purple. Back, dorsal, and caudal studded with small semi-lunar spots. A large patch of arterial red on the opercule and margin of the preopercule. Pectorals, ventrals, and anal grayish white, tinged with rose red." The rays are given in the following formula: "Br. 11; P. 12; V. 8; A. 13; D. 11—0."

The specimens described by Sir John Richardson were obtained by Dr. Gairdner from the Katpootl (Cathlapootl) river, a small tributary of the Columbia, emptying into the right side of the latter a short distance below Fort Vancouver. Richardson named the species in honor of Captain Clark, the indefatigable explorer, and seems to consider it identical with Captain Clark's dark variety of salmon trout, (which we think is the same as our *S. Gibbsii.*) In color, Richardson says, "this species resembles the *mykiss* of Kamtschatka, and there is no very material discrepancy in the number of rays in the fins."

The same writer, in the addenda to the Fishes, page 308, notices some trout received from

**Genus* FARIO, Valenc.

"GEN. CHAR.—Possesses all the characters of the salmons, differing from the latter by the presence of only one row of teeth upon the shaft of the vomer. The rest of the bones forming the upper roof of the mouth being toothless."—GIRARD.

New Caledonia as follows: "The *ultai* of the New Caledonia tribes differs from the last* in the scales being firmer, duller, and rather smaller, and the body more thickly and generally covered with black spots, *which extend well down the sides.* The spots on the dorsal and tail are also more regular and conspicuous, and the teeth are stronger, especially those on the palate bones; a flexuose row on the vomer does not extend quite so far back as the palatine teeth. The *ultai* is most probably the *Salmo clarkii*, (p. 225,) and also the dark salmon-trout of Lewis and Clark, noticed in page 163."

The *mykiss* of Kamtschatka referred to by Richardson is the *S. purpuratus* of Pallas. From the abundance of red and purplish markings of this fish—marks by no means strongly displayed by Dr. Girard's *S. clarkii*, even when that fish is in bad condition—we certainly cannot consider the latter to be the *mykiss*, or that the *S clarkii* of Girard is that of Richardson.

The *Salmo clarkii* of Richardson is probably one of the autumnal species of anadromous salmon which, not feeding in fresh water, become, when exhausted, marked with patches of red. No specimens have been obtained in any of the recent collections.

SALMO MASONI, Suckley.

Fario clarkii, Grd. pl. LXXI, figs. 5-8, Vol. X.

Sp. Ch.—Body sub-fusiform; head well developed, forming the fifth of the total length. Maxillary slightly bent, extending to a vertical line drawn inwardly to the posterior rim of the orbit. Jaws equal. Anterior margin of dorsal fin a little nearer the extremity of the snout than the insertion of the caudal fin. Back brownish grey; upper surface of head blackish grey; sides silvery grey; fins ash grey; dorsal and caudal spotted. Upper regions of head and body studded with irregular black spots or specks. Tail emarginate.

Syn.—*Fario clarkii*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 219.—Ib. Gen. Rep. Fishes, p. 314. [Non *Salmo clarkii*, Richardson.]

I obtained this species at the *Cath-la-pootl* river, August 2, 1853, and am indebted for it to the skill of Captain McClellan, as he took it with the artificial fly at a time when they did not readily bite at any bait. The Indians brought to our camp about the same time what I supposed to be the same species, some of them two feet long.

When fresh its colors were as follows: Back, dark olive; sides, silvery, with green and purple reflections; belly, white; iris, yellow; spots black.—C.

According to Dr. Girard, the arrangement of the rays is as follows: Br. 11; p. 14; V, ?; A, 13; D, 15. For reasons that seem to me sufficiently good, I have considered this fish distinct from that described as *F. clarkii* by Richardson, and have named it in honor of my good friend Governor Charles H. Mason, of Washington Territory, who has so frequently aided me in adding to my collections specimens of great interest and value in various branches of natural history.

Specimens of this trout were obtained by the writer at Fort Dalles, on the Columbia, from the same waters as the other brook trout was taken. It runs up the small streams a little later than the latter, and is distinguishable at a glance by its smaller and less numerous black spots, and by wanting the red patches under the jaws, already alluded to. In habits, size, &c., it is almost precisely similar to the other species, and is taken with the same baits, jumping readily at the artificial fly, and freely taking meat, grasshoppers, worms, and similar food.

There is a trout very common in the small streams emptying into Puget Sound, near Fort Steilacoom, during the latter summer months and early autumn, which resembles this species

* Alluding to a fish known to the tribes of New Caledonia as the "*suppai*."

very closely, and probably is identical with it. They are caught freely with either common bait, or the "artificial fly," but by preference choose more readily half-dried *salmon-roe*, which fishermen, who are not too sportman-like to indulge in such unartistic angling, very frequently use, preferring the roe in its half-dried, glutinous, sticky, condition, because it adheres more readily to the hook. With such bait, and with "artificial flies," the writer has taken in a few hours large "strings" of handsome trout; on one occasion catching thirty-four fish, the aggregate weight of which, when some hours out of the water, amounted to fifteen pounds. A favorite place for catching these fish is McAllister's creek, a small stream about eight miles from Olympia, the capital of Washington Territory. The best "spots" for fishing there, are below the "old mill site," at a point where the stream meanders through the Nisqually "tide prairies," and where the tide ebbs and flows strongly. The best angling is had during the last of the *ebb*, and half through the *flood*, at which time the trout, having retreated to the deep holes, can be caught very rapidly. At the same place I have caught with a hook and line several young "silver salmon," such as might be called by the English *grilse*.

FARIO STELLATUS, Grd.

Oregon Brook-Trout.

PLATE LXIX, FIGS. 5—8.

SP. CH.—Body elongated and fusiform; head well developed, contained four times and three-quarters in the total length; jaws equal; maxillary gently curved, reaching a vertical line, drawn posteriorly to the orbit. Anterior margin of dorsal fin a little nearer to the extremity of the mouth than the insertion of caudal fin. Back light olive; belly light yellowish white. Head, body, and fins profusely spotted with black.

SYN.—*Fario stellatus*, GRD in Proc Acad. Nat. Sc. Philad VIII, 1856, 219.—IBID, Gen. Rep. Fishes, p. 316.

Opkalloo, WASCO INDIANS—*Common trout*, vernacular.

This trout is found in all the rivers about Shoalwater bay, and above tide-water take the hook readily in spring and fall. I consider it entirely a fresh water fish, though called there "salmon trout." It grows to the length of two feet, and is said sometimes to weigh fifteen pounds. In color it closely resembles the preceding.—C.

The trout of Oregon and Washington Territories, which replace the *Salmo fontinalis*, or common trout of the middle and Atlantic States, belong to two species, very similar to each other in their habits, which are also much like those of their Atlantic congener just mentioned. They belong to the species last described and to the present kind.

The *S. stellatus* is very abundant in all the brooks and small rivers emptying into the lower Columbia and Puget Sound. It seems to enter the more rapid streams early in the spring, but, I doubt whether it can be strictly called *anadromous*, as it is found in sluggish fresh water at all seasons; and I have caught it frequently from small lakes and brooks having no connexion with the sea at any season. When living in brooks near the sea they seem to avail themselves, however, of the invigorating effects of salt water, as I have caught them sparingly in such situations; but, as already stated, access to the sea seems to be by no means absolutely necessary even to health. The spawning season appears to be at its height in mid-winter, and lasts, occasionally, in certain individuals, as late as the first of March.

While stationed at Fort Steilacoom I frequently amused myself by angling for trout, either using the "artificial fly" or common bait. Angle-worms being not found, as yet, in that region, I was obliged to rely upon *meat*, *fresh fish*, and *salmon-roe* when desirous of using natural bait. Unlike the *S. fontinalis*, (the common brook-trout of New York,) this trout does not delight in

the rough, foaming, swift waters of rapids and cascades, but seemingly prefers streams having a *gentle* current, and is even not averse to the still waters of *quiet lagoons*, providing that they be cold, deep, and clear. Like the Atlantic species they are fond, in summer-time, of lying in shady situations during the heat of the day. They are found in many of the small lakes, on the Nisqually plains, near Fort Steilacoom, from which they can be taken in great numbers with the "fly," affording much sport to the scientific angler. The largest caught by me, in that vicinity, were taken in February from the tidal waters of a small mill-stream. They weighed a little more than two pounds each, and were the largest of the species that I have ever seen. I doubt very much whether they are taken over three pounds in weight, from half to three-quarters of a pound being more common. The fish just mentioned, as taken by me, were caught with a large, gaudy, *unnatural* salmon-fly. In the same stream, but from the brackish water near its mouth, I caught, in January, 1854, many trout. Some were taken with the "revolving spoon," and others with the "fly," or with meat. At that season they were generally soft and "flabby," and seemed to be in an anaemic condition consequent upon spawning. Other specimens, even at a consideraly later period, had not yet spawned, and, when caught, seemed literally overflowing with milt and mature ova, which were plentifully discharged on the slightest pressure, or even when jarred while being carried strung, in the ordinary manner, on a stick. A fish, in bad condition, taken at that time, had the following colors: Back bright olive; belly light yellowish white; numerous black spots on head, sides, and fins. Patches, under the chin, of very pale yellowish vermillion, *not bright red*, as in the same fish when in good order. Other fish taken while in the same condition showed much more of the unhealthy red blotches, &c., so frequently alluded to in this report. In common with the other trout this is called the *kwuss-putl* by the Nisquallies. It is a fine active trout, affording much sport to the angler, and is a hardy fish, capable of adapting itself to very varied circumstances. For the table its flesh, however, is by no means equal to that of its Atlantic representative. With the exception of its lacking *red* spots along the sides it is as handsome as the latter fish. Like the eastern trout they are capricious in their appetites, and at times will reject food which on other occasions they seize with avidity. The ova, when *mature*, are of a pale yellowish red, and are nearly double the size of those of the brook-trout of the middle States. The skin of a male fish of this species was preserved by me at Fort Dalles, Oregon. It was caught on the 18th of April, 1855, and seemed in good condition, although its flesh was quite pale. The spots on the body were black, each being paler in the centre. They were irregular and numerous, and were numerous on the upper and caudal fins, head, and opercula. Color of back bright silvery olive, lighter on the sides, and silvery white on the belly. Pectoral, ventral, and anal fins reddish orange. The patches of vermilion, on the anterior concealed borders of the branchia, were bright, and, like those of the trout caught in Clark's Fork, and some of those found in the affluents of Puget Sound, form a striking mark quickly recognized by the most superficial observer. The colors, as just given, may be considered as normal to the healthy adults of moderate size, and would admit of insertion under the head of *specific characters*.

At Fort Dalles this species is common in all the permanent streams in spring, and is taken in company with the other species of black-speckled trout during the summer months. The other kind, *S. masoni*, has smaller spots, which are more scattered and less numerous; and, so far as my observation extends, it lacks the red streaks under the jaw. The two species also vary in the comparative size of the scales, those of the *S. masoni* being larger than the present.

SALAR, Valenc.

GEN. CH.—All the characters of the salmons, but differing from them as well as from the genus *Fario* in being provided with a double row of teeth upon the shaft of the vomer, whilst the front of that bone is smooth and toothless.

SYN.—*Salar*, VALENC. in *Cuv. & Val.* Hist. Nat des Pois. XXI, 1848, 314.—GRD. in Proc. Acad. Nat. Sc., Philad. VIII, 1856, 219.

(SALMO,) SALAR LEWISI, Grd.

Missouri Trout.

PLATE LXXII.

SP. CH —Body rather thickish upon the middle region; head moderate, constituting a little less than the fifth of the total length; maxillary gently curved; its posterior extremity reaching a vertical line drawn immediately behind the orbit. Anterior margin of dorsal fin a little nearer the extremity of the snout than the base of the caudal fin. Ground color of the upper region bluish gray, of the inferior region orange or yellow. The back, peduncle of the tail, dorsal, adipose and caudal fins are spotted with black. The belly and lower fins are unicolor, a deep orange hue existing along the rays, and also in the shape of a dot upon the abdominal scales, and which disappear in alcohol.

SYN.—*Salar lewisi*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 210.—IB. Gen. Rep. Fishes.

The present species was first noticed by Lewis and Clark, who took them at the falls of the Missouri river, and expressly noticed the absence of red spots upon them, which are replaced by black.

I made a journey of thirty miles expressly to obtain specimens of these trout, and succeeded in taking with the "fly" some half dozen, two of which were preserved, and were the typical individuals upon which Dr. Girard described the species. They were taken at a point just below the falls above mentioned, and are doubtless the same as those got by Lewis and Clark. The individuals procured by me averaged about one pound in weight. Some doubtless attain a much greater size, perhaps reaching four or five pounds. Many trout were found in the Rocky mountains, most numerously, however, west of the dividing ridge, in the small tributaries of Clark's Fork. In general appearance they seemed identical with this species, but no critical examination was made, the specimens procured having been destroyed *in transitu*. If they are found to be identical in species, the *S. lewisii* will then be included in the fauna of Washington Territory.

THALEICHTHYS PACIFICUS, Grd.

The Eulachon.

PLATE LXXV, FIGS. 1–4.

SP. CH —Head sub-conical and pointed. Mouth large; posterior extremity of maxillar bone extending to a vertical line drawn posteriorly to the orbit. Eye rather small Adipose fin placed opposite the posterior portion of the anal, which is quite elongated. The insertion of the ventral fins is situated considerably in advance of the anterior margin of the dorsal. Scales moderate, sub-elliptical. Dorsal region, dark grayish olive; middle of flank, yellowish orange dotted with black; belly yellowish, unicolor; upper surface and sides of head grayish: fins, unicolor.

SYN.—*Thaleichthys stevensi*, GRD. Gen. Rep. Fishes.

Salmo (*mallotus*) *pacificus*, RICH, F B. A.

To Sir John Richardson's account of the *Eulachon* but little can be added. They formerly entered the Columbia river in great numbers, and were equally abundant in Puget Sound. At present, although sparingly found in the waters named, they cannot be considered as occurring in large numbers south or east of the southern end of Vancouver's Island. In the latter locality they are very abundant in certain seasons, but nearly always a season of abundance is followed by three or four years of scarcity. Further northward they are constantly abundant. The Haida, Stickene, and Chumtseyan Indians, living along the coasts of British and Russian

America, bring vast quantities of these fish with them when visiting the white settlements on Puget Sound. The fish thus brought are for the consumption of the strangers during their stay, and have been simply dried, without salt, and for convenience in drying or transportation have been strung on sharp, pliable sticks which are passed through the heads.

In July, 1856, Dr. William Fraser Tolmie, chief factor of the Hon. Hudson Bay Company, a gentleman well known to naturalists for his interest in science, presented me with a bunch of dried *eulachon*, which he had obtained from some of the "Northern" Indians. Dr. Tolmie also gave me the following memoranda: "These fish were caught at the mouth of Nass river, which empties into salt water near latitude 54° 40′ north. The Indian name of the species is almost unspellable. Formerly they were quite abundant between the 46th and 49th parallels of north latitude. They are now but seldom caught south of latitude 50° north in any great number. North of that point they are still taken by the savages in vast quantities, and are smoked and dried for trade and home consumption. When eaten after being thus prepared they should be either steamed or broiled." When thus cooked they are very palatable, and some that I have eaten, which had been salted like "Dutch herring" or "Yarmouth bloaters," as food are equal to any salt fish that exists. These fish are so fat that when dried the Indians frequently use them as substitutes for candles, as they burn when set on end with a clear, brilliant flame.

Several *eulachon* in the recent state were obtained by me from different portions of the lower end of Puget Sound and the straits. I am particularly indebted to Lieutenant Murden, of the United States revenue service, for a pair of excellent specimens of these, as well as for many other objects of natural history which he was often kind enough to collect for me.

Eulachon, like trout and salmon, are frequently so fat that *strong alcohol destroys them.* Any person who will discover a preservative fluid which will keep fish of this family in good anatomical condition, and to a *certain extent* (for that is all we can hope for) without effacing the natural colors of the fish, will confer a great favor to ichthyologists. I have tried various solutions but think my experience is in favor of strong alcohol diluted with one-third its bulk of fresh water, with a little common powdered alum added. The alum is thrown in for the same purpose that housewives frequently put it in their pickle jars, for the sake of what they call "fastening the colors" of the articles to be preserved.* Using a solution as above upon a handsome salmon trout, I had the opportunity of examining the fish one month afterwards when it was in a very good state of preservation, the red spots being almost of natural hue. I then sent the fish on its perilous voyage to Washington city. This voyage, which has so frequently blasted my endeavors icthyological, was, as usual, *disastrous*, the specimen, with many others, never having been heard from.

* Care should be taken that too much alum is not added, as it is apt to attack the bones.

CHAPTER II.

REPORT UPON THE FISHES EXCLUSIVE OF THE SALMONIDAE.

AMBLOPLITES ÆNEUS, Agass.

Black Bass, &c.

PLATE I.

SP. CH.—Posterior extremity of maxillary extending to a vertical line intersecting the pupil. Insertion of ventrals opposite the base of the pectorals. Anterior spiny ray of anal fin under the ninth dorsal one. Posterior margin of caudal fin slightly emarginated. Upper regions of head and body of a coppery brown; inferior regions, yellowish brown.

SYN.—*Cichla ænea*, LESU. Jour. Acad. Nat. Sc. II, 1822, 214, fig.—KIRTL. Rep. Zool. Ohio, 18, 168, 191.

Centrarchus aeneus, CUV. & VAL. Hist. Nat. Poiss. III, 1829, 84.—RICH. Faun. Bor. Amer. III, 1836, 18. Pl. lxxv.—DEKAY, New Y. Fauna, 1842, 27, Pl ii, fig. 4.—KIRTL. Bost. Jour. Nat Hist. IV. 1842, 229. Pl. xi, fig. 1.—STOKER, Synops. 1846, 37.

"*Ambloplites aeneus*, AGASS." GIRARD, Gen. Rep. Fishes, P. R. R. Reports, X, 1858, 8.

Black Bass; Black Sunfish, &c. VERNACULAR.

The black bass is quite abundant in the lakes of western Minnesota. I have obtained them from the small lakes near Fort Snelling and also from Lightning lake, where they are very common, and attain a comparatively large size; the adults averaging more than a foot in length.

They take bait greedily, and I have caught many with the "revolving spoon." The flesh of the fish is excellent when cooked, comparing favorably with that of the pickerel or the pike-perch, in whose company it is often found. The best period in the day to fish for the species are, as with many others, the hours of early morning, or a brief period before sunset. Our command found the addition of such fine fish to their fare very acceptable, especially as the region where they were found in greatest abundance was almost entirely destitute of game, the buffalo region had not yet been reached, and confinement to bacon and flour had already become a hardship.

POMOTIS LUNA, Grd.

Northern Sunfish, or Moon Sunfish.

SP. CH.—Body sub-orbicular in profile. Head moderate; snout sub-conical. Mouth small; posterior extremity of maxillary extending to a vertical line drawn in advance of the anterior rim of the orbit. Eye moderate. Sub-orbital and supra-scapular bones not crenated. Edge of preopercle very slightly crenated. Opercular flap small. Spinous portion of dorsal fin of moderate height, and lower than the soft; its origin being situated opposite the base of the pectorals, and consequently in advance of the origin of the ventrals. Caudal fin posteriorly emarginate. Tips of ventrals overlapping the vent but do not reach the anterior margin of the anal. Extremities of pectorals nearly even with the tips of ventrals. Greenish brown above, ellowish beneath; sides of head with blue and yellow lines. Fins unicolor, either yellowish or greenish oli e. (Colors described m alcoholic specimens)

YN.—*Pomotis vulgaris*, RICHARDS, Faun. Bor. Amer. III, 1836, 24; pl. lxxvi.—AGASS. Lake Super. 1850, 293.

Pomotis luna, GRD. in Proc. Acad. Nat. Sc. Philad. November, 1857.—IBID. Gen. Rep. Fishes, 22.

Northern Sunfish. Vernacular.

Sunfish, "pumpkin seeds," or roach, as they are called in Connecticut, are abundant in the same situations as the last mentioned fish. They are a little larger than the average of the individuals found in New York State, but in other respects seem very similar. They are taken with the same bait, and seem to be identical in habits with their more eastern relatives. I observed, in some of the lakes of western Minnesota, vast numbers of their spawning beds or nests. These were usually of two or three feet in diameter, and depressed in the middle.

STIZOSTEDION BOREUS, Grd.

Okow, or Horn Fish; Pike-perch; Wall-eyed Pike.

PLATE XI, FIGS. 5—8.

SP. CH.—Body slender, elongated, and sub-fusiform. Snout conical; mouth deeply cleft; posterior extremity of maxillary bone extending to a vertical line drawn posteriorly to the orbit. Scales on cheek and opercle not deciduous, larger upon the opercle than upon the cheek. Insertion of ventral fins situated posteriorly to the base of pectorals, and somewhat anteriorly to the origin of first dorsal. Posterior margin of caudal crescent shaped. Anus situated opposite the origin of the second dorsal fin. Yellowish or olivaceous, spotted with black.

SYN.—*Lucioperca borea*, GRD. Proc. Acad. Nat. Sci. Philad. November, 1857.

Okow, CREES,
Horn Fish, FUR TRADERS, } RICHARDS. Faun. Bor. Amer. III, 1836, 14.

The pike-perch is extremely abundant in some of the lakes near Sauk river, Minnesota, and I found them quite common in the pond holes and lagoons of Milk river, a tributary of the Upper Missouri.

It is caught readily with the "revolving spoon" and with common bait, and when hooked is an active game-like fish, affording much sport to the angler. For the table its flesh is very good, resembling somewhat that of the yellow perch, or as if intermediate between that and that of the pickerel—hence its vulgar name.

CHIROPSIS NEBULOSUS, Grd.

SP. CH —Dorsal fins contiguous. Caudal posteriorly sub-concave. Lower portion of cheeks and opercular apparatus scaleless. Base of anal longer than soft dorsal. Upper region black; inferior region olivaceous.

SYN.—*Chiropsis nebulosus*, GRD. Gen. Rep. Fishes, 1858, 45.

The colors above given are from an alcoholic specimen.

This fish was obtained by me from the brackish waters just inside of the mouth of Steilacoom creek, and was caught with the "revolving spoon." It is probable that it, like many of the sculpins there caught, merely enter the river at high tide, retreating to the salt waters of the sound at the ebb. The extremities of the fin rays are free, giving the fins a fimbricated appearance. These rays were of a dingy yellow color; sides mottled with dusky brown and dirty yellow; ventral fins yellowish.

COTTOPSIS ASPER, Grd.

Prickly-skinned Sculpin.

SP. CH.—Origin of first dorsal opposite the insertion of the upper ray of pectorals. First ray of anal under the fourth of second dorsal. Tip of pectorals extending to a vertical line passing posterior to the vent. Skin generally prickly; latera line slightly deflected upon the peduncle of the tail. Grayish white, studded with clove-brown spots; beneath speckled.

SYN.—*Cottus asper*.—RICH. Faun. Bor. Amer. III, 1836, 295 and 313, pl. xcv, fig. 1.

Trachidermis richardsoni, HECK. Ann. Wien Mus. II, 1837, 162.

Centridermichthys asper, RICH. Voy. of Sulph. Ichthyol. 1844, 74; and, Rep. Ichthyol. China and Japan (Rep. Brit. Assoc.)

Cottopsis asper, GRD. Proc. Bost. Soc. Nat. Hist. III, 1850, 303.—Nouv. Mém. Soc. Helv. Sc. Nat. XII, 1851, 185; and, Smith. Contrib. to Knowled. III, 1852, 62.—GIRARD, Gen. Rep. Fishes, 51.

These small sculpins are very abundant in the small fresh water streams emptying into Puget Sound. I have caught them from streams communicating with the sea, but still securely interrupted by high mill-dams. The average size of the species, as found near Fort Steilacoom, is about three inches in length, having colors quite dark. Those caught on the Columbia, 200 miles above its mouth, are nearly twice as large and show much yellow in their coloration. They are readily taken by hook and line, and are easily recognized by their rough prickly skins. I have not heard of their being eaten, but doubt not that, were they larger, they might be found equal in nutritious qualities to the sculpins of salt water.

OLIGOCOTTUS MACULOSUS, Grd.

Sp. Ch.—Head sub-conical. Mouth moderately cleft; posterior extremity of maxillary extending to a vertical line intersecting the pupil. A stoutish bicuspid process on the convexity of the preopercle. Two acute nasal spines. Dorsal fins contiguous. Origin of anal in advance of the anterior margin of second dorsal. Yellowish brown above, mottled or variegated with blackish; along the dorsal region a series of blotches of a deeper hue; lower half of sides vermiculated. Abdomen of a bright saffron hue in the male. Inferior surface of head with traces of black markings; throat and abdomen unicolor, as also the ventrals and anal. Dorsals, caudals, and pectorals transversely barred.

Syn.—*Oligocottus maculosus*, Grd. Proc. Acad. Nat. Sc. Philad. VIII, 1856, 133; and, Journ. Bost. Soc. Nat. Hist. VI, 1857, Plate xxiv, fig. 7.—Ibid. Gen. Rep. Fishes, 1858, 56.

Specimens of this fish were obtained at Puget Sound. No notes were made of its habits, which are probably much like those of the other sculpins.

LEPTOCOTTUS ARMATUS, Grd.

Slender Sculpin.

Plate XV, Fig. 2.

Leptocottus armatus, Grd. Proc. Acad. Nat. Sc. Philad. VII, 1854, 131, 145; VIII, 1856, 133.—Ibid. Gen. Rep. Fishes, p. 60.

Acanthocottus inermis, Ayres, MS.

Sp. Ch.—Head much depressed; upper jaw longer than the lower; posterior extremity of maxillary extending somewhat beyond the vertical of the posterior rim of the orbit. A preopercular process provided with three spines directed upwards. Blackish brown above; whitish beneath; dorsals, caudal, and pectorals yellowish, barred with black; anterior dorsal with a black spot posteriorly. Ventrals and anal whitish.—(The colors given are those of fish altered by alcohol. See below.)

The colors of this species are much changed by alcohol. When fresh they are as follows: Back olive, (nearly black in dark rivers,) or nearly yellow, sometimes, when pale, mottled with grayish and black, with three darker bars across body. Sides silvery, with purplish and rosy tints; belly dull white; pectoral fins white at base, becoming yellow towards the tip and barred with black; tail pale grayish, with olive bars; iris bright bronze gold color. The largest specimens are commonly the palest.

This fish inhabits Shoalwater bay and its rivers in abundance, and bites readily at the hook with almost any bait and at all seasons, but is rarely taken for food where much better fish are so abundant.

The young fish, from two to four inches long, run in shoals over the mud flats at the edge of the advancing tide, supplying food for the large flocks of gulls, &c., which are to be seen on the shore. These little ones are so much darker in color as to seem at first distinct species.—C.

Quite abundant at Puget Sound, where they are not unfrequently eaten by the Indians. The heads are cut off and thrown away and the rest of the body generally roasted. The flesh

is white and firm when cooked, and of delicate flavor, although somewhat dry. They enter the mouths of small creeks at high water, retreating with the tide. As elsewhere, they are bold, greedy feeders, and give the angler much annoyance when fishing for other and better fish by constantly nibbling off his bait and frequently insisting upon being hooked. I have taken them with ordinary clam bait, and also with the revolving spoon. The Indians generally procure them by spearing. A fish of this species, obtained by me at Fort Steilacoom in January, 1854, presented the following appearance: Upper parts of head and back yellowish brown, tinged with green; belly and lower parts white; lateral line yellowish white; pectoral fins brownish olive, tipped with very pale yellow, and crossed with four bars of bright yellow; ventral and anal fins yellowish white; caudal olive, crossed with three partial yellowish bands. The colors of this individual are a fair sample of those generally found in the species.

ASPICOTTUS BISON, Grd.

Buffalo Sculpin.

PLATE XV, FIG. 1.

SP. CH.—The posterior extremity of the maxillary extends to a vertical line drawn midway between the posterior edge of the pupil and the posterior rim of the orbit. The scutellae constituting the lateral line are crowded, vertically elongated. Upper regions dark greenish brown, mottled or blotched with black. Beneath dull yellowish, with meandric dark lines under the head and throat. Ventrals uniform yellowish white; other fins mottled yellow and black.

SYN.—*Aspicottus bison*, GRD. Proc. Acad. Nat. Sc. Philad. VII, 1854, 130; &, VIII, 1856, 133.—IB. Gen. Rep. Fishes, p. 66.
Clypeocottus robustus, AYRES, Proc. Cal. Acad. Nat. Sc. I, 1854, 11.

This toad-fish or sculpin is not uncommon in the waters of Puget Sound. In habits it resembles the preceding species, but seems to confine itself more to deep water. A specimen, caught in January, 1854, had twelve ovoid brownish lilac spots on the iris, which was itself dingy white.

ARTEDIUS NOTOSPILOTUS, Grd.

Ayres' Sculpin.

PLATE XXII *b*, FIGS. 5 & 6.

SP. CH.—Surface of head sub-tuberculous and scaly. Preopercle armed with a flat tricuspid spine. Anterior margin of first dorsal situated in advance of the beginning of the dorsal band of scales, which is broad, and extends from the thoracic arch to near the terminus of the base of the second dorsal. Olivaceous, with a series of saddle-like black patches. Abdomen dull yellow or white.

SYN.—*Artedius notospilotus*, GRD. Proc. Acad. Nat. Sc. Philad. VIII, 1856, 134; &, in Bost. Jour. Nat. Hist. VI, 1857; Pl. xxiv, figs. 5 and 6.—IB. Gen. Rep. Fishes, p. 71.
Calycilepidotus lateralis, AYRES, Proc. Cal. Acad. Nat. Sc. I, 1855, 77.

But a single specimen of this fish was obtained by me. It was taken by Lieutenant Murden, of the United States revenue service, from Puget Sound, near Port Townsend. No notes were made of its habits.

ZANIOLEPIS LATIPINNIS, Grd.

Rough Sculpin.

PLATE XVII, FIGS. 5 & 6.

SP. CH.—Three small spines upon the convexity of the preopercle. First dorsal much longer than the second, with its two anterior rays protracted beyond the others. Anal fin longer than the soft dorsal, and provided with three spinous rays.

Upper surface and sides of head prickly and rough like the surface of the body. Color, yellowish brown; fins spotted or barred with black.

Syn.—*Zaniolepis latipinnis*, Grd. in Proc. Acad. Nat. Sc. Philad. November, 1857, 202.—Ib. Gen. Rep. Fishes, p. 73.

No notes were made on this species. A single specimen was obtained at Puget Sound.

NAUTICHTHYS OCULO-FASCIATUS, Grd.

Bar-eyed Sculpin.

Sp. Ch.—Posterior extremity of the maxillary extending to a vertical line drawn across the anterior rim of the pupil. First dorsal anteriorly filiform. Extremities of posterior rays of both the dorsal and anal projecting beyond the insertion of the caudal. Anal fin shorter than the second dorsal, and not as deep as the latter is high. Ground color of a uniform rusty red. A black band crosses the eye, through the pupil, and extends across the cheeks.

Syn.—*Blepsias oculo-fasciatus*, Grd. in Proc. Acad. Nat. Sc. Philad. November, 1857, 202.
Nautichthys oculo-fasciatus, Grd. Gen. Rep. Fishes, p. 75.

This small sculpin seems to have generally the same habits as the other cottoids. A single specimen was procured near Fort Steilacoom.

SEBASTES MELANOPS, Grd.

Rock "Cod."

Sp. Ch.—Upper surface of head generally spineless. Posterior extremity of maxillary reaching a vertical line drawn anteriorly to the posterior rim of the orbit. Origin of dorsal fin opposite to or slightly in advance of the base of pectorals. Upper regions of a claret brown, the sides of the same mottled with darker.

Syn.—*Sebastes melanops*, Grd. Proc. A. N. Sc. Phil. VIII, 1856, 135.—Ib. Gen. Rep. Fishes, X, 1858, 81.
Sebastes variabilis, Ayres, (non Cuvier,) Proc. Cal. Acad. Nat. Sc. 1854, 7; & Proc. Bost. Soc. N. Hist. V, 1855, 9.
Taht-leh-de-gwrest of the Nisquallies, (Gibbs' MSS.)

This fish, improperly called rock cod by the settlers at Puget Sound, is one of the best table fishes there found. It attains a size of about 20 inches, and is said to vary much in color. It is frequently caught with the hook, biting freely at any ordinary bait.

GASTEROSTEUS SERRATUS, Ayres.

Gasterosteus serratus, Ayres, Proc. Cal. Acad. Nat. Sc. I, 1855, 47.—Ib Gen. Rep. Fishes, p. 88.

Sp. Ch.—Body entirely plated; peduncle of tail keeled. Dorsal spines three, high and slender, conspicuously serrated upon their edges; anterior one inserted a little in advance of the base of the pectorals. Insertion of ventrals situated somewhat in advance of the second dorsal spine, their own spines being serrated upon both edges, more conspicuously above than below, and extending beyond the tips of the *ossa innominata*. Posterior margin of caudal fin concave.—*Gen. Rep. Fishes*, p. 88.

Above, dark grayish olive; below, white, sometimes purpish.

I caught these little fish in a fresh water pond close to the bay, and suppose that they had merely entered to spawn, having observed the same species in salt water. This was in July and August, and I did not see anything of them in fresh water at other seasons. Their habits of building a little nest of grass, roots, &c., like a bird, in which the spawn is deposited and carefully watched, makes these fish interesting subjects of observation.—C.

GASTEROSTEUS PUGETTI, Grd.

Puget Sound Stickleback.

Sp. Ch.—Body partly plated; peduncle of tail not keeled. Dorsal spines three, slender, not serrated upon their edges; anterior inserted immediately behind the base of pectorals. Insertion of ventrals in advance of the second dorsal spine, their

own spine being slender, serrated upon its edges, and extending beyond the tips of the *ossa innominata*. Posterior margin of caudal slightly emarginated.

SYN.—*Gasterosteus pugetti*, GRD. Proc. Acad. Nat. Sc. Philad. VIII, 1856, 135.—IB. Gen. Rep. Fishes, 92.

Vast numbers of *sticklebacks* are found in the shallow fresh water streams near Fort Steilacoom. During severe droughts, some of the small brooks in that vicinity becoming dried up, multitudes of these little fish are found dead on the surface of the mud so recently submerged. Individuals of the species rarely exceed an inch and a quarter in length.

AMBLODON GRUNNIENS, Rafin.

Buffalo Perch; Grunting Perch, &c.

PLATE XXIII.

SP. CH.—Profile of the head depressed on the nape. Snout thick, blunt, and short. Posterior extremity of maxillary extending to a vertical line intersecting the anterior rim of the pupil. Extremities of pectorals almost even with the tips of ventrals, or else projecting slightly beyond them. First anal spine diminutive; second one stout and well developed. Caudal fin posteriorly convex. Color bluish-gray, lighter beneath than above. Fins grayish-olive, and maculated.

SYN.—*Amblodon grunniens*, RAFIN. Ichthyol. Ohiens. 1820, 24.—GIRARD, Gen. Rep. Fishes, 96.

Sciaena oscula, LESU. in Journ. Acad. Nat. Sc. Philad. II, 1822, 252; plate xiii.—KIRTL. Rep. Zool. Ohio. 168, 192.

Sciaena grisea, LESU. in Journ. Acad. Nat. Sc. Philad. II, 1822, 254.

Corvina oscula, CUV. & VAL. Hist. Nat. des Poiss. V, 1830, 98.—RICHARDS. Faun. Bor. Amer. III, 1836, 68.—DEKAY, New Y. Faun. IV, 1842, 73; plate xxi, fig. 63.—STORER, Synops. 1846, 67.

Corvina grisea, DEKAY, New Y. Faun. IV, 1842, 76.

White perch of the Ohio, lake sheepshead, buffalo perch, grunting perch, &c., VERNACULAR.

A single individual was obtained from Milk river, Nebraska. No notes were made of its habits.

GUNNELLUS ORNATUS, Grd.

Banded Mud-fish.

PLATE XXV*b*, FIGS. 6 and 7.

Gunnellus ornatus, GRD. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 149.—IBID. Gen. Rep. Fishes, p. 116.

SP. CH.—Dorsal and anal fins contiguous to the caudal. Anal spines, two. Ventrals reduced to two exceedingly small spines. Head quite small. An occipito-ocular dark vitta continued vertically beneath the orbit to the hyoid apparatus. Ground color yellowish; about thirteen dorsal roundish spots of blackish brown, and about eighteen lateral, subquadrate ones of light brown.

This little fish may be generally found at low tide on oyster-beds and shoals, and seem to be almost amphibious. When alive they are of a dark grayish color, with tranverse bars and mottlings of a dark olive. They are resident in the bays at all seasons, and those collected are among the largest I have seen, their length not exceeding three inches.—C.

Several were obtained from the bays of Puget Sound, near Fort Steilacoom.

CEBIDICHTHYS VIOLACEUS, Grd.

Violet Monkey-fish.

PLATE XXV*b*, FIGS. 4 and 5.

SP. CH.—Upper surface of head narrow, declivous laterally. A fleshy crest along the cranial ridge. Mouth large; posterior extremity of maxillaries extending to a line drawn across the posterior rim of the orbit. Origin of anal fin situated

opposite the anterior margin of the soft dorsal. Ground color uniform brownish violet. An occipito-ocular vitta of deep purplish violet. Two other vittae of the same hue extend, one from the postero-inferior rim of the orbit, the other from the anterior rim, obliquely backwards across the cheeks and opercular apparatus.

SYN.—*Apodichthys violaceus*, GRD. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 150.
Cebidichthys cristagalli, AYRES, in Proc. Cal. Acad. Nat. Sc. I, 1855, 58; Pl. I, figs. 1–3.
Cebidichthys violaceus, GRD. Gen. Rep. Fishes, 121.

Two immature individuals were obtained at Steilacoom, Puget Sound.

LUMPENUS ANGUILLARIS, Grd.

Eel-shaped Lumpenus.

PLATE XXV*b*, FIGS. 1–3.

SP. CH.—Head slender, continuous with the outline of the body. Gape of mouth slightly oblique. Posterior extremity of maxillar bone extending to a vertical line drawn midway between the anterior rim of the orbit and the pupil. Origin of dorsal fin situated opposite the base of the pectorals. Pectorals and caudal spear-shaped; greenish olive, upper regions maculated. Caudal fin transversely barred.

SYN.—*Blennius anguillaris*, PALL. Zoogr. Ross. Asiat. III, 1831, 176.
Gunnellus anguillaris, CUV. & VAL. His. Nat. Poiss. XI, 1836, 437.—STORER, Synops. 1846, 121.
Leptogunnellus gracilis, AYRES, in Proc. Cal. Acad. Nat. Sc. I, 1855, 26.
Lumpenus anguillaris, GRD. Gen. Rep. Fishes, 123.

A single specimen was obtained from Bellingham bay. No notes were made concerning it.

PORICHTHYS NOTATUS, Grd.

Porous Catfish.

PLATE XXV.

SP. CH.—Upper surface of head quite flat. An acute preopercular spine stretching across the opercle. Posterior extremity of maxillar bone extending to a vertical line drawn posteriorly to the orbit. Four series of pores on either side of the body. A subgular and an abdominal series, as also several of these on the sides of the head. Upper regions dark bluish violet; sides and belly silvery gray. A sub-crescentic streak beneath the eye.

SYN.—*Porichthys notatus*, GRD. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 141 and 151.—IBID. Gen. Rep. Fishes, 134.

An individual of this species is found in our collection made at Fort Steilacoom, Puget Sound. No notes, however, were made concerning it. Frequently isolated specimens already dead were sent to us by friends at a distance, so that the study of their habits during life was impossible.

MORRHUA?

Puget Sound Cod.

The *Ko-pel-la* of the NISQUALLIES, (GIBBS.)

A small codfish is quite common in Puget Sound. Near Fort Steilacoom they are taken rather abundantly between May and mid-summer, at which season they repair to the more shallow water, and are easily speared by the natives. Although scarcely exceeding four or five pounds in average weight, they are, for the table, equal to those taken on the Atlantic coast. Some which we salted and dried in the ordinary manner were excellent, and when cooked were preferred to the salt cod purchased in the shops. Mr. Gibbs informs me that cod are taken at Port Townsend as early as the middle of March.

The small codfish described by Dr. Girard as *Morrhua proxima* is probably also found in Puget Sound. It is, generally, not over five or six inches in length.

PLATICHTHYS RUGOSUS, Grd.

The Rough Flatfish.

Platichthys rugosus, Grd. Proc. Acad. Sc. Philad. VII, 1854, pp. 139 and 155.—Ib. Gen. Rep. Fishes, p. 148.

Sp. Ch.—Eyes moderate, situated on the left side. Interocular space moderate. Peduncle of tail long; origin of dorsal fin corresponding to a vertical line intersecting the middle of the pupil. Scales very rugose and plate-like; lateral line slightly arched above the pectoral fins. Left side, reddish or olive brown; fins, olivaceous, dorsal and anal, with alternate vertical bands of black, longitudinal on tail. Ventrals and pectorals, unicolor. Right side, dull yellow, (white when fresh.)

This fish is abundant at Shoalwater bay during the warmer months; frequenting the flats and small channels among shoals. I never succeeded in catching it with a hook, nor have I heard of its being done. But by wading in the shallow pools left by the tide they may be taken in large numbers with the hand, net, or spear. They have a curious mode of escape, by darting rapidly to a muddy spot, stirring up the mud, and then returning suddenly to the place they started from. By carefully watching this trick they may be found half-buried in the mud where least expected.

The largest I have seen were about ten inches long.—C.

Several species of flounder and sole are common in Puget Sound. The latter are a little larger than the sole of the British waters, and somewhat thicker in proportion. The fins on their lower surface are frequently tinged with black. The smaller kinds, or flounders, are extremely numerous near Fort Steilacoom. They are readily caught at low tide, in water about four fathoms deep, with hooks baited with clam or other bait. The Indians spear great numbers in the shallow bays, and on the flats opposite the mouths of the rivers. When cooked they resemble the common flounder of the Atlantic, and although not very highly esteemed for the table, are yet, when well cooked, very good food.

EMBIOTOCA PERSPICABILIS, Grd.

Sapphire Perch.

Plate XXXII & Plate XXVI, Figs. 1 & 2. Vol. X.

Sp. Ch.—Body sub-elliptically elongated. Frontal region gently declivous. Eyes of medium size. Posterior extremity of maxillary not quite reaching the interior rim of the orbit. Anal fin long, its anterior undivided rays longer than the rest, and its origin situated opposite the twelfth articulated ray or dorsal. Tips of pectorals reaching vertical line intersecting base of last dorsal spine. Five branchiostegal rays. Sixty-three scales in lateral line. Deep purplish blue above, lighter beneath. Flanks with light narrow longitudinal stripes intersecting the point of union of rows of scales. Dorsal, caudal, anal, and ventral fins reddish purple; pectorals yellowish

Syn.—*Embiotoca perspicabilis*, Grd. in Proc. Acad. Nat. Sc. Philad. VII, 1855, 321.—Ib. Gen. Rep. Fishes, 178.

This viviparous perch is exceedingly abundant in the waters of Puget Sound, near Fort Steilacoom. It is a very handsome fish—perhaps, in its bright colors, the most striking of any found in those waters. A specimen, obtained in February, 1855, had eighteen *mazarine blue* streaks below the lateral line, running nearly parallel from gills to tail, and having both above and below the line a series of blue spots disposed crescentically beneath the eye and on the gill covers. The spaces between these spots were of an olivaceous color, changing, according to light, to resplendent golden and purplish green reflections. The blue of the back is of an indigo cast, and darker than that of the sides and belly, the streaks on the latter being separated by lines of golden yellow. Space between the pectoral fins golden.

These fish are taken by the Indians at all seasons, but more abundantly in June and July, when they are more frequently found in shallow water, and are speared. In July, 1856, vast numbers were taken by some friends of mine in a seine, at which time the sacs of the females were filled with young almost fully developed. The flesh of these fish was found flabby and insipid, resembling, though scarcely as good as that of the weak-fish of the New York markets. It would seem that they remain pregnant for a long time, as a specimen caught by me in February was found by Mr. Girard to contain eighty young, of an average size of half an inch, while those caught in July had their uterine sacs filled with young nearly one and three-quarters of an inch in length. Perhaps they bring forth several times a year.

DAMALICHTHYS VACCA, Grd.

Silvery Perch.

PLATE XXXIII.

SP. CH.—Male provided with a sub-pyriform sac upon the anterior third of anal. Branchiostegals, five on either side. Ground color grayish olive. Scales with a golden and silvery metallic reflect. Fins unicolor.

SYN.—*Damalichthys vacca*, GRD. in Proc. Acad. Nat. Sc. Philad. VII, 1855, 321.—IB. Gen. Rep. Fishes, 182.

This fish, in external appearance and size, much resembling the porgee of Long Island sound, is almost as abundant as the preceding species in Puget Sound. It is readily taken with hook and line, and I have caught them with the "revolving spoon." When cooked it will rank as a good second-rate fish.

HOLCONOTUS RHODOTERUS, Agass.

The Golden-barred Perch.

Holconotus rhodoterus, AGASS. Amer. Jour. Sc. 2d ser. XVIII, 1854, p. 368.—GRD. Proc. Acad. Sc. Philad. VII, 1854, 141, 152, and 322.—IB. Gen. Rep. Fishes, p. 193.

SP. CH.—General form elongated, neither elliptical nor fusiform; frontal region sub-concave. Head sub-conical; mouth small; posterior extremity of maxillary not quite reaching the vertical line anterior to rim of orbit. Eyes rather large and circular; branchiostegals five. About forty-four scales in lateral line. Bluish gray or olive above, belly and sides silvery white, with three transverse bars of golden yellow, like finger marks.

In alcohol these disappear, and in some specimens "rose-colored rows of spots are seen."—C.

This species of fish, resembling in appearance the "white perch" of the eastern seacoast, comes into Shoalwater bay during May and June in great numbers, remaining until September, during which time the young are produced. They swim in schools near the surface, and often jump into boats and canoes—a habit which the Indians take advantage of to catch them, pushing their canoes along the high bank of channels at low tide, when the fish, crowded towards the shore, jump in. They will, however, often jump in when there seems no necessity for it, and sometimes even voluntarily leap high and dry on shore. I never saw any above tide-water in the rivers, nor have I seen the young fry after their birth. They rarely bite at a hook, though I have seen them caught in October when fishing for trout, with salmon roe for bait. They are pretty good as food, resembling perch.—C.

The only specimen of this fish that I obtained in Puget Sound I supposed was simply the young of the preceding species, and, in consequence, made no notes upon it.

PIMELODUS AILURUS, Grd.

Blunt-tailed Catfish.

PLATE XLIV.

SP. CH.—Head large, broad and depressed, constituting the fourth of the total length. Mouth large and wide; lower jaw the longest; maxillar barbel extending somewhat beyond the edge of the gill aperture. Eye small and sub-elliptical. Dorsal and pectoral fins interiorly serrated. Base of anal fin entering about five times and a half in the total length. Caudal fin somewhat emarginated posteriorly. Dark reddish brown above; whitish beneath.

SYN.—*Pimelodus ailurus*, GRD. Gen. Rep. Fishes, 1858, 210.

Several specimens of this fish were obtained from Lake Amelia, near Fort Snelling, Minnesota. In habits the species do not differ from their more eastern relatives. I saw none over a foot in length.

PIMELODUS OLIVACEUS, Grd.

Olive-colored Catfish.

PLATE XLI, FIGS. 1—3; and PLATE XLII, VOL. X.

SP. CH.—Body sub-fusiform, compressed. Head very much depressed and tapering, constituting about the fifth of the whole length. Mouth small; upper jaw the longest. Maxillar barbel extending to the middle of the pectoral fin. Eye large, sub-elliptical; its diameter contained five times and a half in the length of side of head, and about twice on the interocular space. Dorsal spine very finely serrated posteriorly; pectoral spine very strongly so. Caudal fin deeply furcated. Olive-brown above; olive-white beneath.

SYN.—*Pimelodus olivaceus*, GRD. Gen. Rep. Fishes, 1858, 211.

Two specimens of this catfish were obtained from the waters of Milk river. It is probably abundant in all the turbid affluents of the upper Missouri.

A larger species—one attaining an average weight of 12 pounds—is found in some of the tributary streams of the Red River of the North. Our command caught many of these at night with "set lines." We found them very palatable when cooked.

MYLOCHEILUS LATERALIS, Agass. & Pick.

PLATE XLV, FIGS. 5—8.

SP. CH.—Head constituting the fifth of the total length. Snout sub conical. Posterior extremity of the maxillary extending to a vertical line drawn across the hind nostril. Diameter of the eye entering five times and a half in the length of the side of the head. Anterior margin of dorsal fin equidistant between the extremity of the snout and the insertion of the caudal. Base of anal fin contained fourteen times in the total length.

SYN.—*Mylocheilus lateralis*, AGASS. & PICK. in Amer. Jour. of Sc. 2d ser. XIX, 1855, 231.—GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 169.—IBID. Gen. Report, Fishes, 214.

Several of these fish were preserved. They were obtained mostly from the fresh water lakes near Fort Steilacoom, where they are abundant. Like the other cyprinoids of Washington Territory, they are of but little value as food, being bony and insipid.

CARPIODES DAMALIS, Grd.

Deer-nosed Carp.

PLATE XLVIII, FIGS. 1—4.

SP. CH.—Head constituting the fifth part of the total length. Eye sub-circular, its diameter being contained four times and a half in the length of the side of the head. Angle of the mouth reaching a vertical line drawn in advance of the

pupil. Insertion of the ventral fins opposite the seventh ray of the dorsal. Caudal posteriorly concave. Dorsal fin anteriorly concave. Lower fins moderately developed. Scales deeper than long, grooved on all sides. Reddish brown above; silvery beneath.

Syn.—*Carpiodes damalis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 170.—Ibid. Gen. Rep. Fishes, 218.

A large number of these fish were obtained from sunken pools on Milk river, Nebraska. When properly cooked they are not unpalatable.

ACOMUS LACTARIUS, Grd.

Milk River Sucker.

Plate L.

Sp. Ch.—Head constituting somewhat less than the fifth of the total length. Mouth small; lips well developed, covered with uniform granules. Eye large, sub-circular; its diameter entering five times in the length of the side of the head. Anterior margin of dorsal fin somewhat nearer the insertion of the caudal than the extremity of the snout. Insertion of ventrals situated opposite the posterior half of the dorsal; their tip extending to the vent. Grayish brown above; grayish white beneath.

Syn.—*Catostomus* (*Acomus*) *lactarius*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 174.
Acomus lactarius, Grd. Gen. Rep. Fishes, 223.

This *sucker* was obtained by me in the lagoons along the course of the upper part of Milk river, Nebraska. At the season of the year in which I visited that locality, the bed of the river being dry in many places, these fish, with others, had retreated to deep holes and small stagnant lagoons in great numbers. With a small seine I was enabled to take, in a very brief space of time, many valuable ichthyological specimens, consisting of individuals of the present species, besides other cyprinoids, pike, perch, &c., some of which were carefully preserved for the national collection, and others afforded a welcome addition to our usual monotonous fare.

CATOSTOMUS SUCKLII, Grd.

Nebraska Sucker.

Plate LI.

Sp. Ch.—Head constituting the fifth of the entire length. Eye small. Mouth rather small; lips moderately developed, covered with conspicuous papillæ. Isthmus of medium width. Dorsal fin as high as long; its anterior margin somewhat nearer the insertion of the caudal fin than the extremity of the snout. Insertion of ventrals a little in advance of the middle of the dorsal, and equidistant between the extremity of the snout and the fork of the caudal. Posterior extremity of anal extending beyond the rudimentary rays of the caudal. Grayish olive above; yellowish olive beneath.

Syn.—*Catostomus sucklii*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 175.—Ibid. Gen. Rep. Fishes, 226.

The present fish is not uncommon in the upper Missouri and its tributaries, in the same localities as the last mentioned species.

In 1854 I noticed in one of the branches of Snake river, Oregon, a *sucker* of about the same size and of much the same general appearance as this. Its colors on the back, however, were darker. Owing to a deficiency in the means of transportation, and to other causes, I was unable to preserve this fish, which I regret the more because it was the only specimen of a genuine sucker (catostomus) that I saw west of the Rocky mountains.

PIMEPHALES FASCIATUS Grd.

Sp. Ch.—Body anteriorly stoutish, its depth being contained five times in the total length, in which the head enters four times and a half. Eye moderate and circular, its diameter being contained somewhat more than four times in the length of

the side of the head. Posterior extremity of maxillar bone not extending as far as a vertical line drawn in advance of the orbit. Extremities of ventrals stretching beyond the anterior edge of the anal. Scales deeper than long, elliptical; brown, fasciated with black.

SYN.—*Pimephales fasciatus*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 180.—IBID. Gen. Rep. Fishes, 234.

Several of these small fish were obtained at Milk river, Nebraska, where they are abundant.

HYBOGNATHUS ARGYRITIS, Grd.

Silvery Minnow.

PLATE LIII, FIGS. 5—8.

SP. CH.—Body sub-fusiform in profile. Head sub-conical, contained five times and a half in the total length. Eye large and sub-circular. Anterior margin of dorsal fin nearer the extremity of the snout than the base of the caudal. Insertion of ventrals equi-distant between the two points just alluded to in reference to the dorsal. Caudal fin entering four times and half in the total length. Scales anteriorly sub-truncated. Olivaceous brown above, yellowish beneath, with a silvery streak along the middle of the flanks. Fins unicolor, greyish olive.

SYN.—*Hybognathus argyritis*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 182.—IBID Gen. Rep. Fishes, 235.

A few of these small fishes were taken from pools along the almost dry bed of Milk river, Nebraska.

ARGYREUS NUBILUS, Grd.

SP. CH.—Head rather small, constituting the fifth of the entire length. Mouth small, and barbel inconspicuous, lips cartilaginous. Eye moderate sized, sub-circular; its diameter entering five times in the length of the side of the head. Anterior margin of dorsal fin nearer the extremity of the snout than the tip of the middle rays of the caudal. Insertion of ventral fins equidistant between the angle of the mouth and the base of the caudal. Blackish brown above; dirty or dull white beneath.

SYN.—*Argyreus nubilus*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 186.—IBID. Gen. Rep. Fishes, 244.

Two specimens were obtained at Fort Steilacoom, Washington Territory.

POGONICHTHYS COMMUNIS, Grd.

Nebraska Dace.

PLATE LV, FIGS. 1—6.

SP. CH.—Head forming a little less than the fifth of the total length, its upper surface quite depressed in the adult. Snout rounded, depressed, and quite protruding. Gape of mouth nearly horizontal; lower jaw shorter than the upper. Posterior extremity of the maxillary extending to a vertical line drawn in front of the orbit. Anterior margin of dorsal fin much nearer the extremity of the snout than the base of the caudal. Insertion of ventrals placed somewhat posteriorly to the anterior margin of the dorsal, their anterior basal edge being nearer the tip of the snout than the base of the caudal. Lobes of caudal fin equally developed. Reddish gray above; whitish or yellowish beneath, with metallic reflects. Fins yellowish olive.

SYN.—*Pogonichthys communis*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 188.—IBID. Gen. Rep. Fishes, 247.

Found in sunken pools and lagoons along the line of Milk river, Nebraska, under similar circumstances as the *Acomus lactarius* already referred to. The species rarely attains a greater length than six or seven inches, and is of very indifferent quality for the table. A characteristic by which the fish may be readily recognized is the large size of its nostrils.

GOBIO GELIDUS, Grd.

U. S. & MEX. BOUNDARY, FISHES, PLATE XXIX, FIGS. 5—9.

SP. CH.—Head constituting the fifth of the entire length in which the caudal fin enters but four times and a half. Eye small, sub-elliptical, its horizontal diameter entering four times in the length of the side of the head. Body slender and tapering;

the anterior margin of the dorsal fin is nearer the extremity of the snout than the insertion of the caudal. Tip of pectoral; reaching to the base of the ventrals; tip of ventrals overlapping the vent, not extending quite to the anterior margin of the anal. Yellowish brown, with a silvery, superiorly dusky, streak along the middle of the flanks.

SYN.—*Gobio gelidus*, GRD. in Proc. Acad. Nat. Sc. Philad. VII, 1856, 188.—IBID. Gen. Rep. Fishes, 248.

Two specimens were obtained from Milk river.

RICHARDSONIUS BALTEATUS, Grd.

Steilacoom Killy.

PLATE LX, FIGS. 1—4.

SP. CH.—Head forming less than the fifth of the total length. Snout sub-conical; jaws even; posterior extremity of maxillar bone extending to a vertical line drawn in front of the orbit. Eye large and circular, its diameter entering three times and a half in the length of the side of the head. Anterior margin of dorsal fin equidistant between the extremity of the snout and the fork of the caudal. Anal fin longer than deep and about as long as the head. Caudal fin constituting about the fourth of the total length. Grayish black above; silvery white beneath. Fins unicolor.

SYN.—*Cyprinus* (*Abramis*) *balteatus*, RICHARDS. Faun. Bor. Amer. III, 1836, 301.—STORER Synops. 1846, 160

Richardsonius balteatus, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 202.—IBID. Gen. Rep. Fishes, 278.

This fish is very abundant in the small fresh water lakes near Fort Steilacoom. It is readily taken with the hook and line, and seems disposed to run in "schools." The flesh when cooked is soft and insipid, and as the bones are so numerous and troublesome it is rarely eaten.

RICHARDSONIUS LATERALIS, Grd.

Spotted Killy.

PLATE LX, FIGS. 5—8.

SP. CH.—Head constituting the fifth of the total length. Snout sub-conical; jaws even; posterior extremity of the maxillary extending to a vertical line drawn behind the nostrils. Eye large and circular, its diameter entering nearly four times in the length of the side of the head. Anterior margin of dorsal fin a little nearer the extremity of the snout than the fork of the caudal. Anal fin deeper than long and much shorter than the head. Caudal fin entering four times and a half in the total length. Blackish brown above; metallic yellowish white beneath, with a black streak above the lateral line. Fins unicolor.

SYN.—*Richardsonius lateralis*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 202.—IBID. Gen. Rep. Fishes, 279.

This fish is very plentiful in the same localities as the last mentioned species, of which it was taken by me to be a variety, or as simply differing in age. In habits, &c., it is precisely similar to the other. The colors given by Mr. Girard are those of fish which have been long in alcohol and of course differ from those freshly caught.

CHEONDA COOPERI, Grd.

Vancouver Chub.

PLATE LXIII, FIGS. 1—5.

SP. CH.—Body elongated, sub-fusiform in profile. Head contained a little short of five times in the total length. Snout thickish, sub-conical, overlapping somewhat the lower jaw; posterior extremity of the maxillar bone extending to a vertical line drawn behind the nostrils. Eye well developed; its diameter entering four times and a half in the length of the side of the head. Fins well developed. Upper regions reddish gray; sides and belly yellowish white with a metallic reflect.

SYN.—*Cheonda cooperi*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 207.—IBID. Gen. Rep. Fishes, p. 294.

This much resembles several other kinds of fish of the Territory, called generally "suckers," "bony fish," "carp," "red fin," &c., and like them all is considered poor food. It can easily

be taken with the hook at Vancouver, and probably also in other parts of the waters of the Columbia. No notes of its colors when fresh are preserved, but they did not differ much from the colors in alcohol, unless in wanting "reddish" on the back. The figure is of the size of life.—C.

PTYCHOCHEILUS OREGONENSIS, Grd.

Oregon Carp.

PLATE LXIV, FIGS. 5—9.

SP. CH.—Body sub-fusiform in profile. Head rather small, elongated; contained four times and a half in the total length; snout slender. Mouth deeply cleft; posterior extremity of maxillary extending to a vertical line intersecting almost the anterior rim of the pupil. Eye of moderate development; its diameter entering about five times in the length of the side of the head. Anterior margin of dorsal fin equidistant between the extremity of the snout and the fork of the caudal. Pectoral and ventral fins rather small.

SYN.—*Cyprinus* (*Leuciscus*) *oregonensis*, RICHA s. Faun. Bor. Amer. III, 1836, 305.

Ptychocheilus gracili, AGASS. & PICK. in Amer. Jour. of Sc. 2d ser. XIX, 1855, 229.

Ptychocheilus oregonensis, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 209.—IBID. Gen. Rep. Fishes, 298.

This fish is found in the Columbia near Fort Dalles, where I obtained a fine specimen about 14 inches in length. The species is readily taken with a hook baited with meat or worms; but as the flesh is of such a poor, insipid character, it is worthless when caught.

Colors of a female: back, deep blue; in certain lights, dark bluish olive; sides, for about half an inch above and below the lateral line, lighter, approaching to silvery; below the line a longitudinal band continues from the angle of the mouth across the *operculum*, bright straw yellow, its boundaries merging into the silvery blue, above and into the white of the abdomen below. Under surface, posterior to anus straw yellow; upper surface of head dark olive; chin and throat yellow; iris dark olive, yellowish orange, and maculated below. Dorsal fin and tail dark olive; anal and ventral orange. Thoracic anteriorly olive, beneath orange.

Family CLUPEIDAE. Herrings.

MELETTA COERULEA, Grd.

Puget Sound Herring

PLATE LXXV, FIGS. 5—7.

SP. CH.—Body slender, elongated, sub-fusiform in profile. Head constituting more than the fifth of the total length. Posterior extremity of maxillar bone extending to a vertical line drawn through the middle of the orbit. Eye large and sub-circular; its diameter entering four times and a half in the length of the side of the head. Anterior margin of dorsal fin nearer the extremity of the snout than the insertion of the caudal. Base of anal fin entering about ten times in the total length. Insertion of ventrals opposite the posterior third of the base of the dorsal fin. Bluish black above; yellowish or whitish beneath, with metallic reflections. Fins unicolor.

SYN.—*Meletta coerulea*, GRD. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 138; &, 154.—IBID. Gen. Rep. Fishes, p. 330.

This fish, commonly known as the "herring," enters Shoalwater Bay in large numbers in June, and is then found at low tide stranded on the flats. It is a very good fish for eating when fresh, and would doubtless become an article of trade smoked, were there not so great an abundance of finer fish on the coast. It grows to the length of ten inches, and when fresh is steel blue above and shining white on the sides and beneath.—C.

According to Mr. Geo. Gibbs, the principal species of small "school-fish" which frequent Puget Sound are of four kinds. 1. The present fish, known to the Nisqually and Skaiwamish

Indians as the *Stole*, and to the Skadgets and Chemakums as *Löse*. 2. The *Washoos* (of the Skadgetts,) which has lately been scarce, was abundant formerly at Point Wilson and elsewhere about the sound. This is a summer fish, and when plentiful, are found in such compact "schools" that the Indians frequently shovel them ashore with their paddles. 3. The *Kwullusteo*, or eulachon. 4. The *Shehd-zoos*, found only at the Skadgett river. The last two kinds are related to the salmonidae, having adipose dorsal fins. Mr. Gibbs, writing from Port Townsend, Puget Sound, under date of March 24, again says: "The Indians have been taking herring in great numbers, quantities, rather, at Port Discovery, where the fishing is better than at Port Townsend. A very large weir of lattice-work, having but one entrance, was constructed on the flats. Within and around this weir a quantity of fir twigs were scattered, to which the spawn adhered. This is then dried on poles around the lodges. When dried, the substance, much resembling light brown sugar in appearance, is stripped from the twigs and carried off by the basket full. The fish entered the opening of the weir in great quantities, and when the tide fell the Indians went in and scooped them up. The weir was about eighty by fifty feet in extent. I am told that the Indians will take in this way as many as three tons of fish at a tide. Sometimes, when pursued by dog-fish, &c., the herring crowd so much as to pile one over the other and roll in masses on the beach." Again he says: "A friend informs me that there are three species (perhaps only three "runs") of herring. One, of middle size, comes in February and March. Another "run," in the beginning of April, is composed of larger fish, thicker in the body than the last, which is rather flat.* In June and throughout the summer a small kind, of the size of the sardine, is common. In August there is a very small silvery fish, three inches long, and not much larger than a lead pencil, which comes in immense numbers and is washed up by the tide. The Indians push them ashore with their paddles. This last species is probably the *Wash-oos*, already spoken of."—(GIBBS *in lit.*)

The present species of herring is quite common at Fort Steilacoom. The Indians, at certain seasons, take them by throwing or scooping them out of the water with poles, along the sides of which, for two or three feet, nails have been driven in closely together and their ends left standing out in rows resembling the teeth of a comb. These fish average about six inches in length, and despite the immense number of bones, are of excellent flavor and may be considered an agreeable table delicacy. The Indians eat great numbers, but they principally make use of them as bait when trolling for salmon. The herring is tied to a hook of the proper size, and gently trolled with a jerking motion. The natives, in this way, take many splendid salmon.

HYODON TERGISUS, Lesu.

Missouri Herring.

PLATE LXXV, FIGS. 1—4. (By error, figs. 4—7.)

SP. CH.—Head contained five times and a half in the total length; snout rounded, sub-conical. Posterior extremity of maxillar bone extending to a vertical line drawn posteriorly to the pupil. Eye very large, sub-circular; its diameter entering about four times in the length of the side of the head. Anterior margin of dorsal fin somewhat nearer the tip of the caudal than the occiput. Base of anal fin entering about four times in the total length. Insertion of ventrals nearer the extremity of the snout than the terminus of the anal.

SYN.—*Hyodon tergisus*, LESU. in Journ. Acad. Nat. Sc. Philad. I, 1, 1818, 366.—RICHARDS, Faun. Bor. Amer. III, 1836, 235.—KIRTL. Rep. Zool. Ohio, 1838, 170, and 195; &, in Bost. Journ. Nat. Hist. V, III, 1846, 338—DEKAY, New Y. Faun. IV, 1842, 265; Pl. XLI, Fig. 130.—STORER, Synops. 1846, 210.—CUV. & VAL. Hist. Nat. Poiss. XIX, 1846, 309.—GIRARD, Gen. Rep. Fishes, P. R. R. Rep. X.

* Flat *laterally?*

The Missouri herring was obtained in Nebraska west of Fort Union. Others apparently similar were taken from the small tributary streams of the Red River of the North. They bite freely at a hook baited with meat, &c., but when captured are of but little use, as they are too bony to be of much value as food.

ENGRAULIS MORDAX, Grd.

Pacific Anchovy.

Sp. Ch.—Body slender, elongated, and sub-fusiform in profile. Head constituting the fourth of the total length; snout sub-conical. Posterior extremity of maxillar bone extending to the sub-opercle. Eye large and sub-circular; its diameter entering four times and a half in the length of the side of the head. Anterior margin of dorsal fin nearer the insertion of the caudal than the tip of the snout. Base of anal fin entering a little over seven times in the total length. Vent situated opposite the base of last ray of dorsal. Ventral fins small, their tips not reaching the vent. Pectorals rather short, posteriorly truncated. Deep bluish brown above; silvery beneath.

Syn.—*Engraulis mordax*, Grd. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 138 & 154.—Ibid Gen. Rep. Fishes, p. 333.

This fish, almost exactly like the famed "anchovy" of Europe in appearance, is also excellent for the table when fresh. It abounds in Shoalwater bay at the same time as the preceding, and may be found in great numbers on the flats, at low tide, where basketsfull may be had for the trouble of picking them up. Like the herring, when fresh its back is dark olive and belly silvery white. All of both these fish have disappeared from the bay by September.—C.

This anchovy is probably the fish referred to by Mr. Gibbs as that known to the Skadgett Indians as the *Wash-oos*.—(See remarks under head of *Meletta cœrulea*.)

SYNGNATHUS ARUNDINACEUS, Grd.

Pacific Pipe-fish.

Sp. Ch.—Head contained seven times in the total length, twice in that of the body. Anterior rim of the orbit equidistant between the apex of the snout and the insertion of the pectoral fins. Longitudinal diameter of the orbit entering eight times and a half in the length of the side of the head. Anterior margin of dorsal fin situated in advance of the anal aperture; its base, in the male sex, entering twice and a quarter of a time on the distance between the concavity of the thoracic belt and the anterior edge of the vent. Blackish brown, maculated beneath with golden yellow.

Syn.—*Syngnathus arundinaceus*, Grd. Gen. Rep. Fishes, 346.

A single specimen of this fish was presented to me by a ship captain, who had obtained it from some part of the California coast. No other facts were ascertained regarding its history.

AMIA OCELLICAUDA, Richards.

Marsh-fish; Dog-fish.

Sp. Ch.—An oblong black spot, with a lighter margin, obliquely situated at the base of the upper lobe of the caudal fin and inclined forwards. Head contained four times and a half in the total length. Insertion of ventrals nearer the base of the caudal than the extremity of the snout. Anterior margin of anal fin nearer the base of the pectorals than the posterior margin of the caudal.

Syn.—*Amia ocellicauda*, Richards, Faun. Bor. Amer. III, 1836, 236.—Cuv. & Val. Hist. Nat. Poiss, XIX, 1846, 422.—Grd. Gen. Rep. Fishes, 349.

The fresh water dog-fish is very common in the lakes near Fort Snelling, Minn. They attain a length of about 20 inches, and being proportionally stout will probably weigh three or four pounds. They readily bite at a hook covered with ordinary bait, and when hooked endeavor to escape by feats of strength and skill equal to those of fish of much higher repute.

Its flesh is soft and pulpy, and is popularly believed to be *poisonous*.

AMIA OCCIDENTALIS, DeKay.

Western Mud-Fish; Dog-Fish.

Sp. Ch.—Base of caudal fin without spot of any kind. Head constituting nearly the fifth of the total length. Insertion of ventrals nearly equidistant between the base of the caudal and the extremity of the snout. Anterior margin of the anal fin nearly equidistant, also, between the base of the pectorals and the posterior edge of the caudal fin.

Syn.—*Amia occidentalis*, DeKay, New Y. Faun. IV, 1842, 269 ; pl. xxxix, fig. 125.—Cuv. & Val. Hist. Nat. Poiss. XIX, 1846, 429.—Grd. Gen. Rep. Fishes, 350.

At the time I was in Minnesota I considered that these fish belonged to but one species—the last—and consequently made no special notes regarding the present kind. I think it probable that upon future investigation they will prove to be the same.

ACCIPENSER TRANSMONTANUS, Richards.

Columbia River Sturgeon.

Syn.—*Accipenser transmontanus*, Richards, Faun. Bor. Amer. III, 1836, 278, pl. xcvii, fig. 2.—DeKay, New Y. Faun. IV, 1842, 347.—Storer, Synops. 1846, 248.—Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 137.

This sturgeon is very common in the Columbia and its larger branches. At Fort Dalles they arrive at about the middle of February, and are caught with hooks by the natives in moderate numbers. I suppose that, owing to the low stage of the river, they are not able to overcome the Dalles falls until about the middle of May. They are taken late in the season high up on Snake river, and I have heard of a single individual which was there taken near Fort Boisé which was fifteen feet in length. They are excellent eating, and are for that purpose justly prized by the Indians, who sell them, when scarce, at very high prices, charging a half dollar frequently for a small piece, scarcely weighing over a pound; indeed, the natives will frequently give a good pony in trade for a large sturgeon.

An individual obtained by me at Fort Dalles had the back *slate-brown;* spots on top of the head, dingy white; iris, *golden bronze;* chin and belly, *white.*

CHIMAERA COLLIEI, Benn.

Elephant Fish; the Skooma.

Sp. Ch.—Head constituting about the sixth of the total length. First dorsal fin sub-triangular; the upper margin, which is directed posteriorly, being crescent shaped, whilst the posterior margin, properly so to be called, is horizontal and parallel with the back, to which it is united by a thin membrane. Second dorsal quite low and elongated, its origin being nearly opposite the insertion of the ventrals, which is nearly half way between the apex of the snout and the origin of the caudal fin. Its upper margin is undulating. Either lobe of the caudal tapering regularly away towards the tip of the tail, the lower lobe extending somewhat further back. Skin perfectly smooth; brownish above; dull white beneath; the back and sides exhibiting numerous dull white rounded spots, variable in size

Syn.—*Chimaera colliei*, Benn. in Zool. *Beechey's* Voy. to the Pacif. 1839, 71 Plate xxiii, figs. 1 and 2.—Richards, Faun. Bor. Amer. III, 1836, 285.—Grd. Gen. Rep. Fishes, 360.

Elephant-fish, Vancouver.

Skooma, Nisqually Indians.

The elephant-fish is truly a curiosity to those who have never before seen it. It is quite abundant on Puget Sound, where it is known to many of the natives as the *skooma.* The first I obtained I caught at night on a hook baited with a piece of pork or other common bait. A few days afterwards I caught another, in shallow water, with my hands. They rarely attain a greater length than fourteen inches, and are quite oily and not ill flavored when cooked. By the Indians they are highly esteemed as food.

ACANTHIAS SUCKLEYI, Grd.

Western Dog-fish.

SP. CH.—Head constituting somewhat more than the sixth of the entire length. Snout very much depressed and elongated; nostrils nearer its apex than the angle of the mouth. Eyes large, elliptical, situated immediately in advance of the mouth. Anterior margin of first dorsal fin nearly equidistant between the pupil and the anterior margin of the second dorsal. A shallow caudal groove along the base of the upper lobe of the caudal. Dark grayish, with a few light irregularly scattered spots.

SYN.—*Spinax* (*Acanthias*) *suckleyi*, GRD in Proc. Acad. Nat. Sc. Philad. VII, 1854, 196.—IBID. Gen. Rep. Fishes, p. 368.

This shark is common at Shoalwater bay, and, in habits, seems to resemble closely its Atlantic congeners, being also commonly known by the same name, "dog-fish." It is equally troublesome to persons fishing in deep water, as it bites at anything used for bait, and, indeed, on the only occasion when I tried that style of fishing, it formed the principal part of our captures. Its usual size is from three to four feet long.

Its colors, when fresh, are as follows: *Adult*, pale liver-color above, with white spots, beneath white; slight bronze reflections above; iris pale sea-green. *Young*, grayish-brown above, with more brilliant gold-bronze tints, especially near the tail, spots purplish white; dorsal fin and tail tipped with brick red, more or less blood red on lower lobe of tail and belly, fading anteriorly; belly white, with gold reflections. These are the colors of the young when just produced. The specimens were caught in October and November.—C.

The present dog-fish is found abundantly in the waters of Puget Sound, and at certain seasons of the year repairs in vast numbers to the more shallow bays and flats off the mouths of its affluent streams. They attain, when adult, an average size of about three and a half or four feet; they are a voracious fish, readily caught with hook and line, and are not unfrequently taken by the natives with spears; their livers are large and very fat, the oil furnished by them being highly prized by the natives. It is for this latter that they are generally taken. The whites get much of the oil in trade, and use it for all purposes to which whale oil is applied. I have been assured, by an intelligent oil refiner, that the oil of this fish, when properly refined, is of a very excellent quality. I have used it, when *fresh*, as a substitute for cod-liver oil, as a medicine for consumptive patients. It seemed equally efficacious, and, in one or two cases, where the procurement of the latter was impossible, I was led to believe that it saved the lives of those taking it. It was given, with alcoholic liquors, in doses, commencing at two teaspoonfuls, increased gradually to a wine glass full, three times a day.

I obtained many specimens of the young, which, although six or eight inches long, were still attached by an umbilical cord to the "yolk-bag."

NOTE.—A very large shark was captured at Port Discovery in December, 1856. My informants told me that from its liver four barrels of oil were extracted! Mr. Gibbs subsquently obtained the skeleton and transmitted it to the national collection. Large sharks are very rare in Puget Sound; *so* rare that it is not improbable that they are stragglers which have followed the warm "Pacific gulf stream" from more southern regions.

RAJA COOPERI, Grd.

The Northwestern Skate.

Raja cooperi, GRD. Gen. Rep. Fishes, p. 372.

Length from tip of snout to root of tail, three feet six inches. Length of tail, two feet. Breadth across middle of belly, four feet two inches. Tip of snout to margin of mouth, eleven inches. Color, above entirely dark brown; below dull white.

Iris yellow. Snout and top of head thickly covered with short, recurved, hooked prickles, diminishing in size from the centre of head towards the circumference. Tail also thickly covered with the same, above and on the sides. No spine in tail. Cartilaginous expansions along its upper ridge, near the end. Convexity about the same on each surface of the body; snout rounded above, flat below. Tail nearly cylindrical; blunt.

In June and July, 1854, several large skates were washed ashore on the sand flats near the entrance of Shoalwater bay, which I had no means of preserving, but I took a sketch of one of the largest. Though I did not see any of them alive, I think they had entered the bay and were left by the ebb tide on some of the extensive sand bars, where they had died. I have never heard of their occurrence at any other season. The Indians will not eat them very often, but say they are not poisonous.—C.

A kind of stingaree or skate is not uncommon in Puget Sound. I saw, however, but one or two specimens, and was unable to preserve any. It is probably the same fish, described by Dr. Cooper as found at Shoalwater bay.

ICHTHYOMYZON CASTANEUS.

Chestnut Lamprey.

Sp. Ch.—Head depressed, constituting the ninth of the total length; body and tail compressed. Buccal disk sub-elliptical provided with a double series of short, tentacular fringes upon its periphery. Posterior margin of buccal aperture exhibiting a series of nine teeth, disposed upon an arc of a circle. Eyes small and inconspicuous. Spiracle sub-tubular, raised above the surface of the head. Origin of the dorsal fin equidistant between the anterior margin of the buccal disk and the apex of the tail. Vent situated immediately in advance of the most elvevated portion of the dorsal fin. Chestnut colored, of a darker tint above than beneath.

Syn.—*Icthyomyzon castaneus*, Grd. Gen. Rep. Fishes, 381.

A lamprey from Galena, Illinois.? Nothing was observed concerning its habits.

AMMOCOETES CIBARIUS, Grd.

Pacific Sand Launce.

Sp. Ch.—Body sub-cylindrical, somewhat compressed posteriorly, with its surface annulated. Buccal disk sub-elliptical, interiorly papillated. Head and chest together contained four times and a half in the total length. Anterior dorsal fin lower than the second, and separated from it by a space not quite the half of its length. Anal fin very low. Deep olivaceous brown above; lighter beneath.

Syn.—*Ammocoetes cibarius*, Grd. Gen. Rep. Fishes, P. R. R. Surveys, vol. X, 1858, 383.

APPENDIX TO THE REPORT ON FISHES.

BY GEO. SUCKLEY, M.D.

THE determination of species and their specific characters have in Chap. 2, been almost entirely copied from Dr. Girard's General Report on Fishes, vol. x. P. R. R. Reports.

In some of the families we are aware, that several practical naturalists of California and elsewhere hold different views from those expressed by Dr. Girard. This is especially the case concerning the genera and species of the SCORPÆNIDÆ and EMBIOTOCOIDÆ.

As a thorough review of all the works and opinions on the subject could not be entered into during the past year, we have preferred temporarily retaining Dr. Girard's nomenclature, rather than attempting partial alterations which themselves would be faulty.

Chapter I, that upon the Salmonidæ, has been written after much study and original investigation. In it we have but occasionally followed the determinations of species contained in the report mentioned.

Since the manuscript of the present work was turned over to the Congressional Printer in February, 1859, we have again crossed the continent, via the Platte River, Bridger's Pass, Salt Lake, Carson Valley, and the Sierra Nevadas to San Francisco. Thence by sea to Vancouver's Island.

In the course of this journey, many notes were made, concerning objects of interest in nature, most of which, however, are from force of circumstances necessarily excluded from these pages. Nevertheless, we are happy to add a few brief items of information concerning the Salmonidæ.

None of this family were found along our route on the eastern slopes of the Rocky Mountains; but, in most of the streams of Utah, more especially Black's Fork near Fort Bridger, Weber River, and the Timpanogos (flowing into Lake Utah through Provo Cañon) the *Salmo virginalis*—a very handsome trout—was plentiful. In its habits and general appearance it much resembles the brook-trout of the middle States (*S. fontinalis*). It is abundant in Black's Fork, from which on the 25th of August, we caught half a dozen, and on the following day about forty, with the artificial fly, to which they rose exactly in the manner of their more eastern relatives, and greedily seized like unsophisticated fish as they were—scarcely learning caution or timidity until pricked once or twice by the alluring and deceitful bait. Probably but few artificial flies—if any—had ever before been cast on those waters. One specimen about ten inches in length, caught with a *red-hackle*, was selected for examination and description. In general outline it was perhaps slightly more stout than the brook-trout of New York (*S. fontinalis*). The curve from the nose to the anterior insertion of the dorsal

fin was very regular. The anterior point of insertion of said fin was but slightly in front of a point at the middle of a line drawn from the tip of the nose to the insertion of the tail. *Colors;* ground color of back pale brown tinged with red; spotted above the lateral line with small spots of black, which were but sparingly distributed anterior to the dorsal fin; a few spots of the same color were also found on the opercules and on top of the head. In shape the spots anterior to the dorsal fin were nearly round and quite small; those in the vicinity of the same fin—but further back—were stellate, but slightly larger, and those posterior to a vertical line drawn from the anus were much larger, more numerous, and quite irregular in form, somewhat resembling those of *S. stellatus*. Anterior to the anus there were scarcely any spots *below* the lateral line except near the head, where there were about half a dozen; posteriorly, however, they were equally numerous both above and below. The general style of the spots, their size and distribution in individuals of this species are well displayed in the figure given in Vol. X., Plate LXXIII. Figs. 1–4.* Indeed in the markings, spots, &c., of this species I noticed great uniformity in all the specimens observed. The color of the dorsal, adipose, and caudal fins was the same as that of the back—but thickly studded with oval and roundish spots of black. The prevailing reddish brown color of the back extended to the nose, but was of a slightly different shade on the head. From the median line of the back it extended down the sides, filling up two-thirds of the space to the lateral line. The silvery white of the belly was separated from the prevailing color of the back by a faint golden band of irregular width [in some specimens this extends from the iris to the base of the tail]. The *lateral line* was distinct. Irides golden bronze, with several roundish spots of black upon them of the size of a pin's head. The under fins were of a pale red, their external rays of a deeper color. Patches of bright vermillion, about one-eighth of an inch in width, were found extending back from the chin to a point opposite the middle of the opercules. The chin was white like the belly. [The vermillion bands above spoken of exist normally in all the specimens seen of this species, and are present also in other species, for example, the *S. stellatus* of Oregon.] The tail was but slightly emarginate. Angle of mouth about opposite (below) the posterior border of the pupil.

The general hues of the Fort Bridger trout when freshly taken were silvery, glistening with bright reflections. The scales are somewhat larger than those of *S. fontinalis*. The point of greatest girth being reached by the tips of pectoral fins when stroked back. Upon inquiry at Fort Bridger, we learned that seventeen or eighteen inches might be considered the maximum size in those waters, and out of forty or fifty fish it is rare to find one over a foot in length.

The species in the Timpanogos River appeared, upon careful examination, to be identical with those of Black's Fork, but much larger. They retreat to the quiet and deep waters of Lake Utah, from whence they ascend the Timpanogos at certain seasons of the year. A friend there caught in August, 1859, one trout which weighed some five or six pounds (approximately), and was twenty-six inches in length. They are said to grow occasionally to thirty inches in length, and are an active fine fish, affording much sport to the fly-fisher, and a delicacy to the epicure.

About the first of September last, we caught three trout from the same stream. Two of these were of good size, weighing from $1\frac{3}{4}$ to $2\frac{1}{4}$lbs. respectively. They rose freely to large dark *hackles*, but refused gaudy or light colored flies. Owing to poor flies which had been in our possession for several years,—the whipping of the hooks having shrunk so that they were easily pulled off, we caught but these three out of many fish that jumped at them.

* The tails are, however, more forked than in the figure.

The stream was excellently adapted for casting the fly, and abounding in fish of fine size and quality, was fit to take position in an angler's Paradise.

The trout of Weber River seemed to vary from those of Black's Fork, in having the lower fins much more tinged with yellow. The stomachs of all, when examined, were found to contain insects, such as wasps, beetles, ants, etc.

We are inclined to believe that the geographical range of the species extends to the west as far as Gravelly Ford, on the Humboldt. Specimens were examined which were caught at Deep Creek, 150 miles west of Great Salt Lake. Approaching so nearly to the trout of all other places in general appearance, and trout-like habits so peculiar and unmistakeable, we cannot refrain from again expressing entire want of faith in the so-called genus *Salar*.

Why the presence or absence of vomerine teeth should swallow up all the other characteristics of the fish to the extent of losing its name and generic position, we cannot imagine, especially when such a basis of classification as that proposed by sticklers for the genus Salar is shown to be faulty in the Salmonidæ by the species *S. scouleri* Rich., specimens of which exist in the Smithsonian Museum which have, and others which have *not*, vomerine teeth. [See remarks on pages 308 and 335.] It seems that should the divisions *Fario* and *Salar* be retained, they should only be as subgenera, and more for convenience than for any other reason.

The *Salmo Quinnat*, Rich. (*see* page 321), we have ascertained, by careful examination, to be the principal species brought to the San Francisco markets. It was found abundant there during the months of January and February, and could easily be recognised by its large head and pointed jaws, and by the number of its branchial rays, which are usually over fifteen in number. The tail is large, and well cut out, and the lower fins unspotted. We heard of two specimens which had been brought to the market that weighed sixty-four and a half pounds each! These were the largest that we have known of in that locality; but fish of seventy pounds, it is said, have been caught further north. This must be about the maximum weight to which it ever attains.

The Quinnat Salmon is obtained for the San Francisco market by fishermen in the Sacramento River, who take them with *gill-nets*, much in the same way as *shad* are caught in the Hudson.

The fishmongers to whom the question was put, whether any peculiarities in external appearance serve to distinguish the sexes, answered that they knew of none.

The same species of salmon was found, about the 1st of December, abundant in the bay at Port Townsend, and at Port Gamble, Puget Sound. The Indians took them in moderate quantities, by trolling in the manner described on page 329. These salmon were not running up the rivers, not yet impelled by instinct so to do, as their ova thus early in the season were but very slightly developed.

In the San Francisco market we also noticed a small salmon, more spotted, with smaller head and more rounded jaws than the *Quinnat*—in fact, much more nearly resembling the *S. Gairdneri* or the *S. truncatus*. This kind is called by the dealers *salmon-trout*. It does not appear to attain a very large size—rarely exceeding 28 inches—and is, for its real or supposed excellence, sold for a much greater price than the *Quinnat*.

In the autumn the *S. scouleri* is probably sparingly found in the Sacramento. We were shown a head, in the Cabinet of the S. F. Academy of Sciences, which evidently belongs to this

species. But, as the hooked snout and elongated teeth of the worn-out Quinnat so much resemble the natural mouth of the *male S. scouleri*, the two species are usually confounded.

A few important observations concerning the Salmon and Trout of the Dalles region are communicated by an old resident there—Nathan Olney, Esq.—who says:

"It is the opinion of the Indians that the *Shooshines* (*S. Gibbsii*) does not go down to the sea. They take it the year round, except, perhaps, during the coldest weather in winter, and *then* because they *do not fish for it.* I have eaten them as late as December, and as early as February. If they *do* return to the sea, they 'run' all the year."

Again he says, in speaking of the *Salmo spectabilis*, Grd.:

"The Indian name of the *Red-spotted Trout* of Dog River is *Puck-cul-leo* in the Dalles language, and *As-chine-ish* in the Walla-Walla."*

The large kind of trout found in a lake near Bellingham Bay may be simply a variety of the *S. stellatus.* A very interesting *salmo*, said to be new, has been found at Lake Chylowyuk, W. T. A Coregonus is also probably found in the lakes of W. T. as well as in those of British Columbia.

ADDITIONAL ERRATA.

BIRDS.

Chap. I, p. 178, at the end of line 11 from top, read *Dr. Tolmie* for "*Dr. Townsend.*"

FISHES.

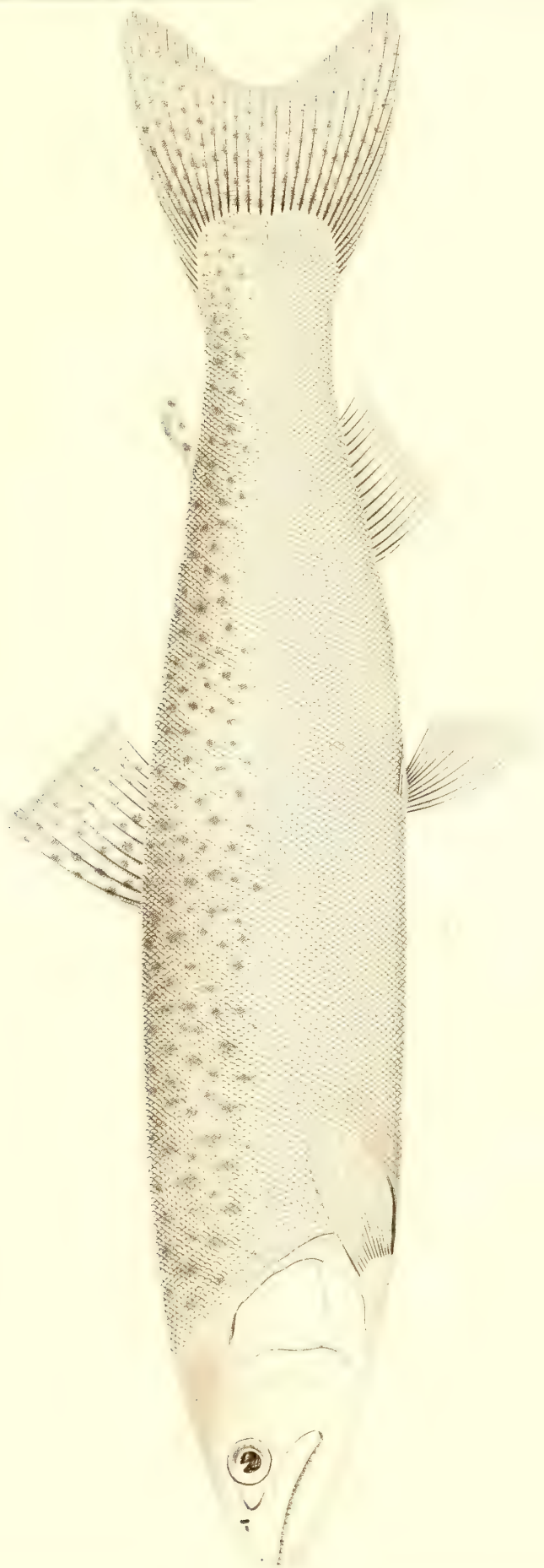
Errata in chap. I. (Report on Salmonidæ.)

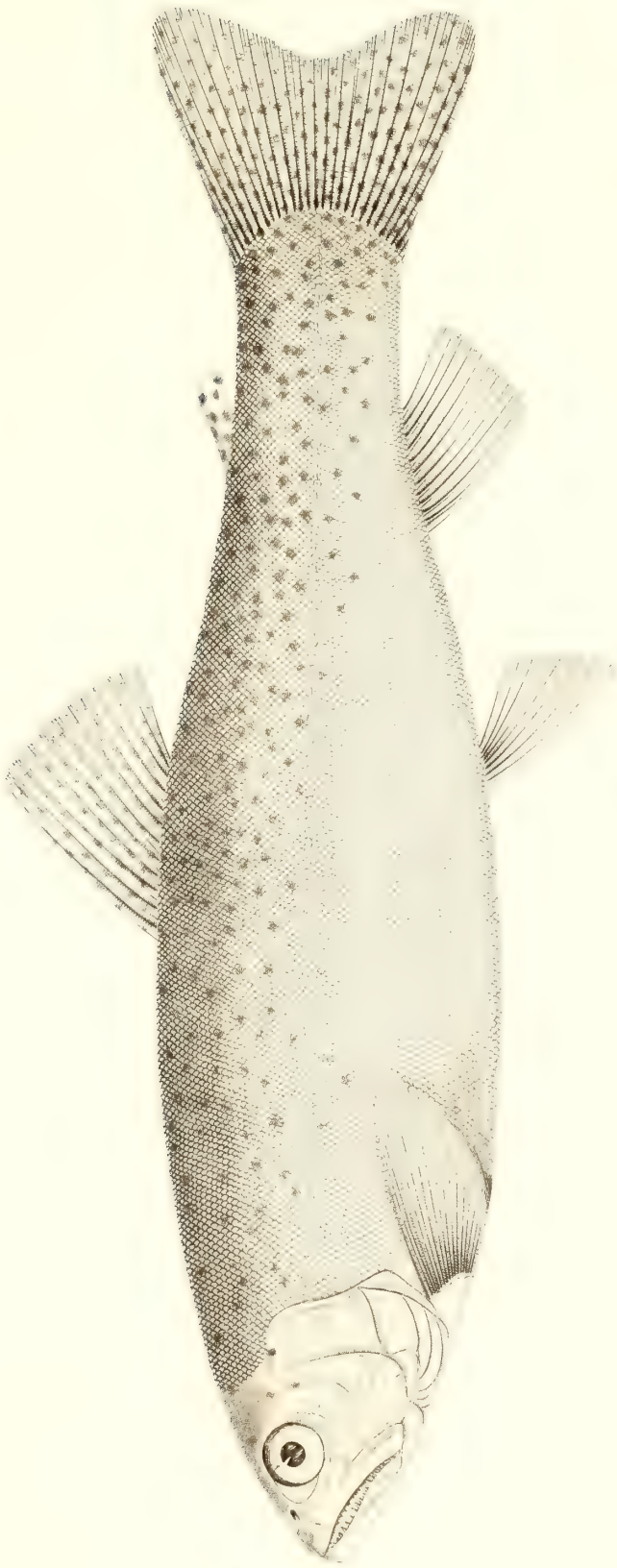
Page 309, line 7 from top, for "*Boreale,*" read *Boreali.*
" 309, " 25 " " " "200 *miles,*" read 20.
" 310, " 21 " " " "*examing,*" read *examining.*
" 313, " 4 " " a dash — should follow "*snake.*"
" 314, " 18 " " the word "*some*" should be *italicised.*
" 316. The *vernacular* name of the 5th species should read "silvery *winter* salmon," instead of *winer.*
" 316. In the foot-note marked "*e,*" the words "*met-hlihts*" and "*Kutch-ulls*" should read *met-hlehts* and *Kutch-uks.*
" 319, line 18 from top, "*S. gibber* Suckley," should read *S. proteus,* PALLAS.
" 319, " 4 from bottom, for "*it does,*" read *is so.*
" 320, " 6 " top, for "*huddole,*" read *huddo.*
" 329, " 15 " " " "*Clallum,*" read *Clallam.*
" 329, " 21 " " " "*skourtz,*" read *skowitz.*
" 333, " 13 " " " "*blueish,*" read *blush.*
" 335, " 7 " " " "*shonquid,*" read *skoquid.*
" 336, " 14 instead of "*from the symphysis of upper maxilla,*" read *from the middle of the intermaxillary.*

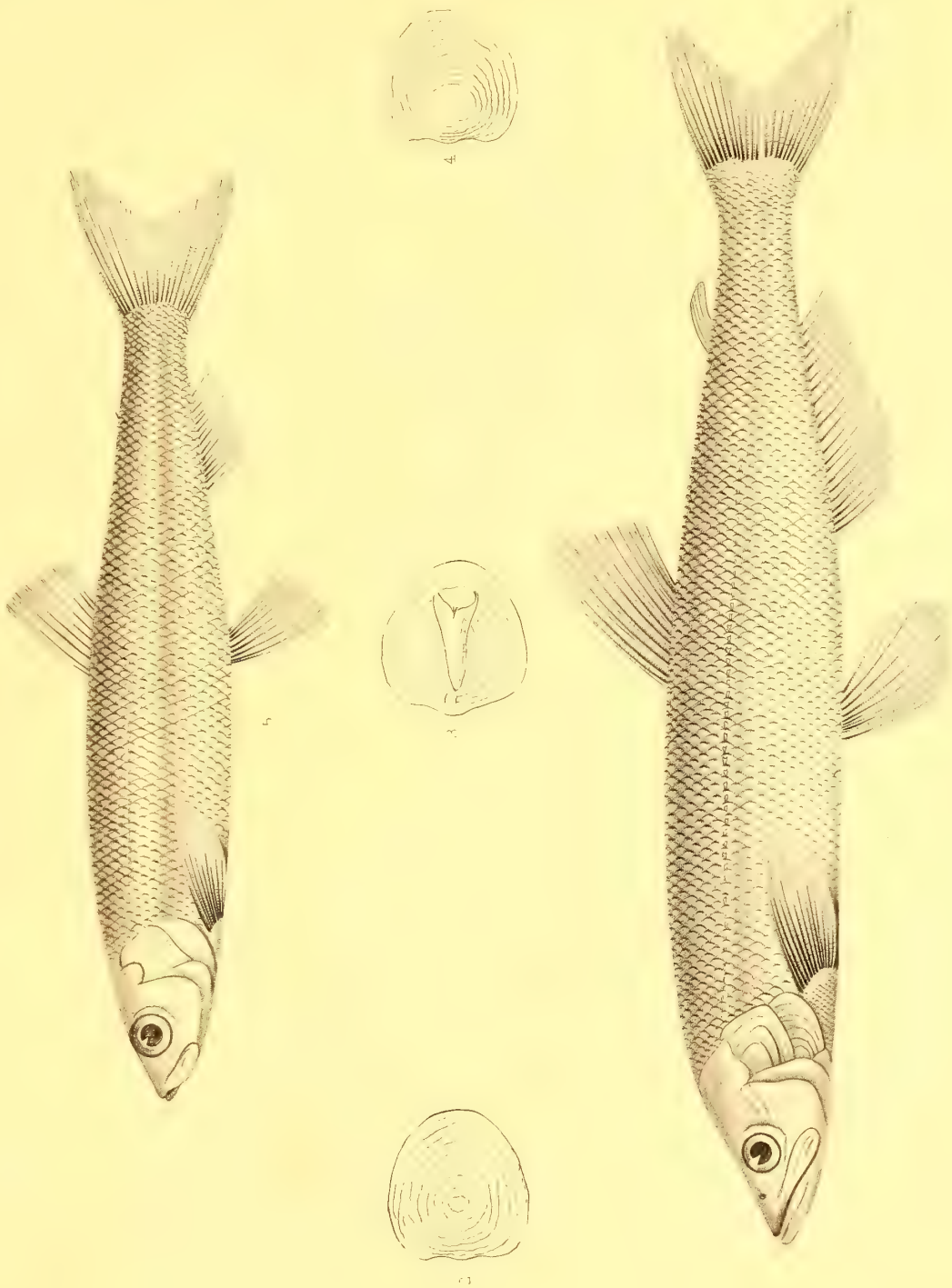
NOTE.—The Indian names *skowitz* and *skoquid* are synonymous.

Page 336, line 3 from top, a comma should be inserted after the word "*developed.*"
" 337, lines 21 and 24 from bottom, read *skoquid* for "*skowquid.*"
" 339, on the first line of the specific description of *S. proteus,* for "*anadipose,*" read *an adipose.*
" 340, line 2 from top, for "*stoaquid,*" read *skoquid.*
" 341, " 3 " top. To the paragraph should be appended a foot-note, in which acknowledgment for the facts therein contained should be made to Pallas's work.
" 341, line 9 from top, for "*formerly*" read *forming.*
" 346, "FARIO STELLATUS Grd." should read SALMO STELLATUS (Grd.), Suckley.
" 348, " (SALMO) SALAR LEWISI, Grd. should read SALMO (SALAR) LEWISI (Grd.) Suckley.
" 348, " 14 from top, (last line of sp. description) the word "and" should be stricken out.
" 349, " 3 from top, after the word "*stay*" the sentence should read—*having been simply dried without salt are, for convenience in drying or transportation, strung on sharp pliable sticks, passed through their heads.*
" 351, " 14 from bottom, for "*fimbricated*" read *fimbriated.*

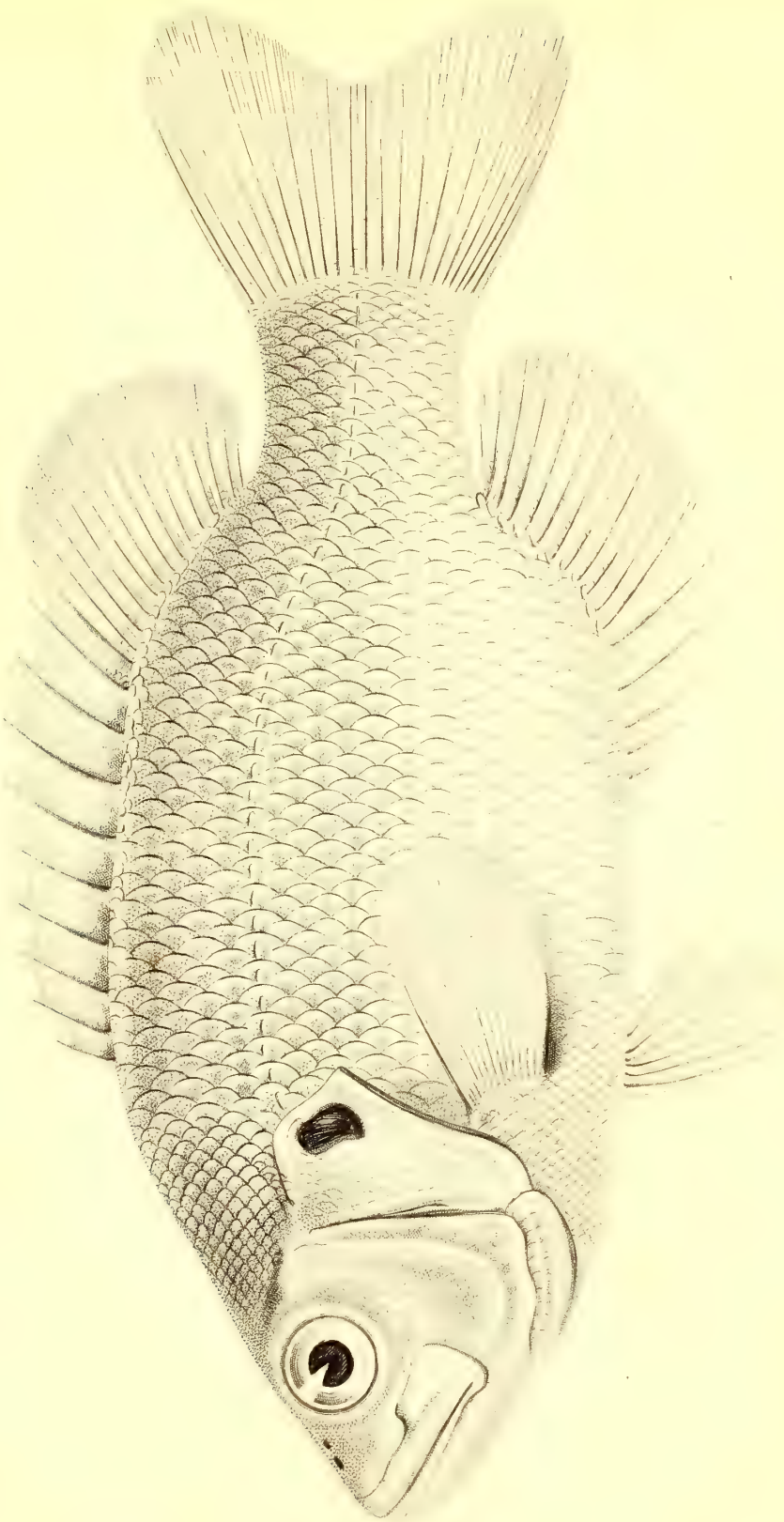
* Those desirous of studying these fishes, with the aid of their Indian names as a guide to identification, and *an assistance in collection,* had better insert these names under their appropriate headings in the table of Indian synonyms.

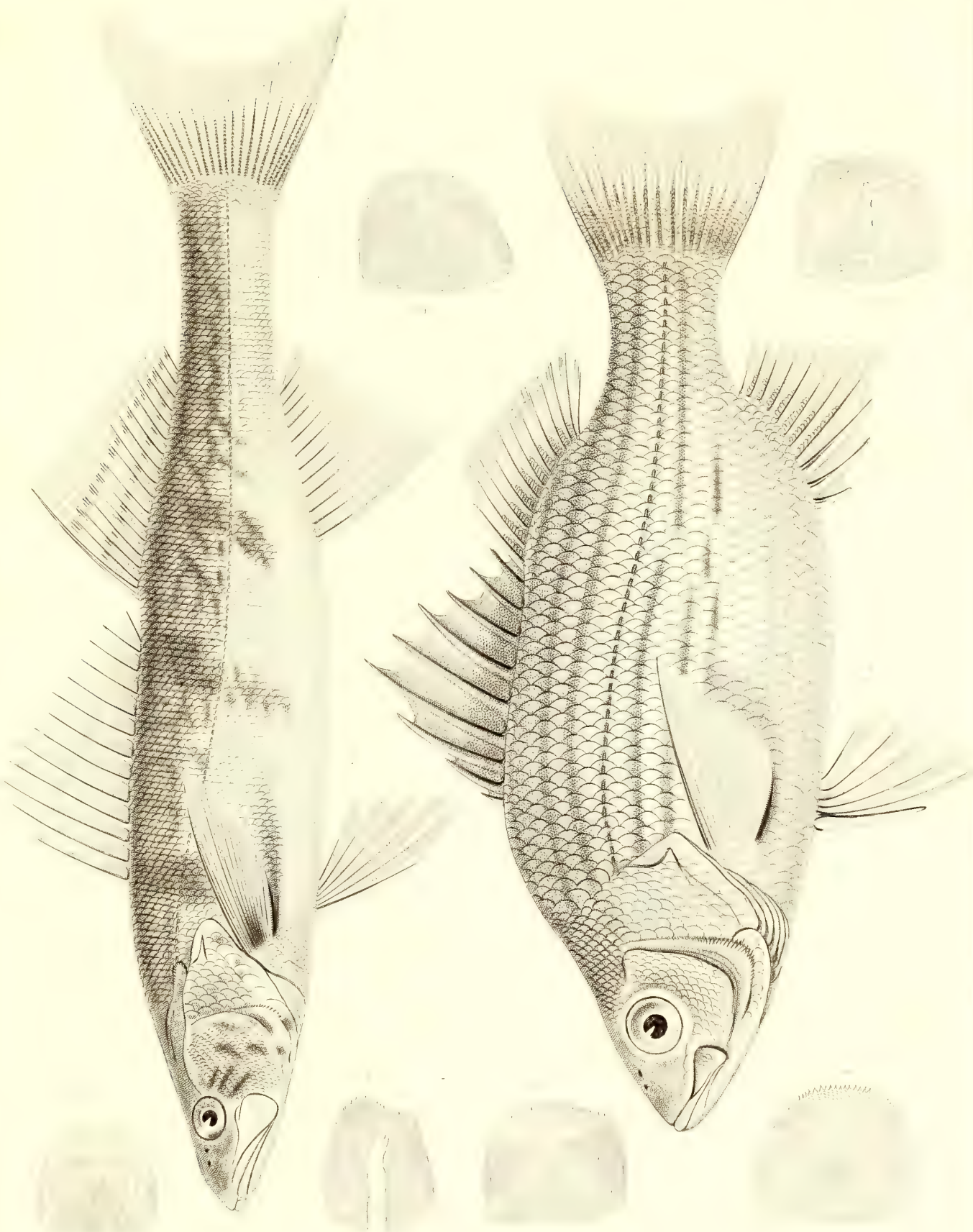


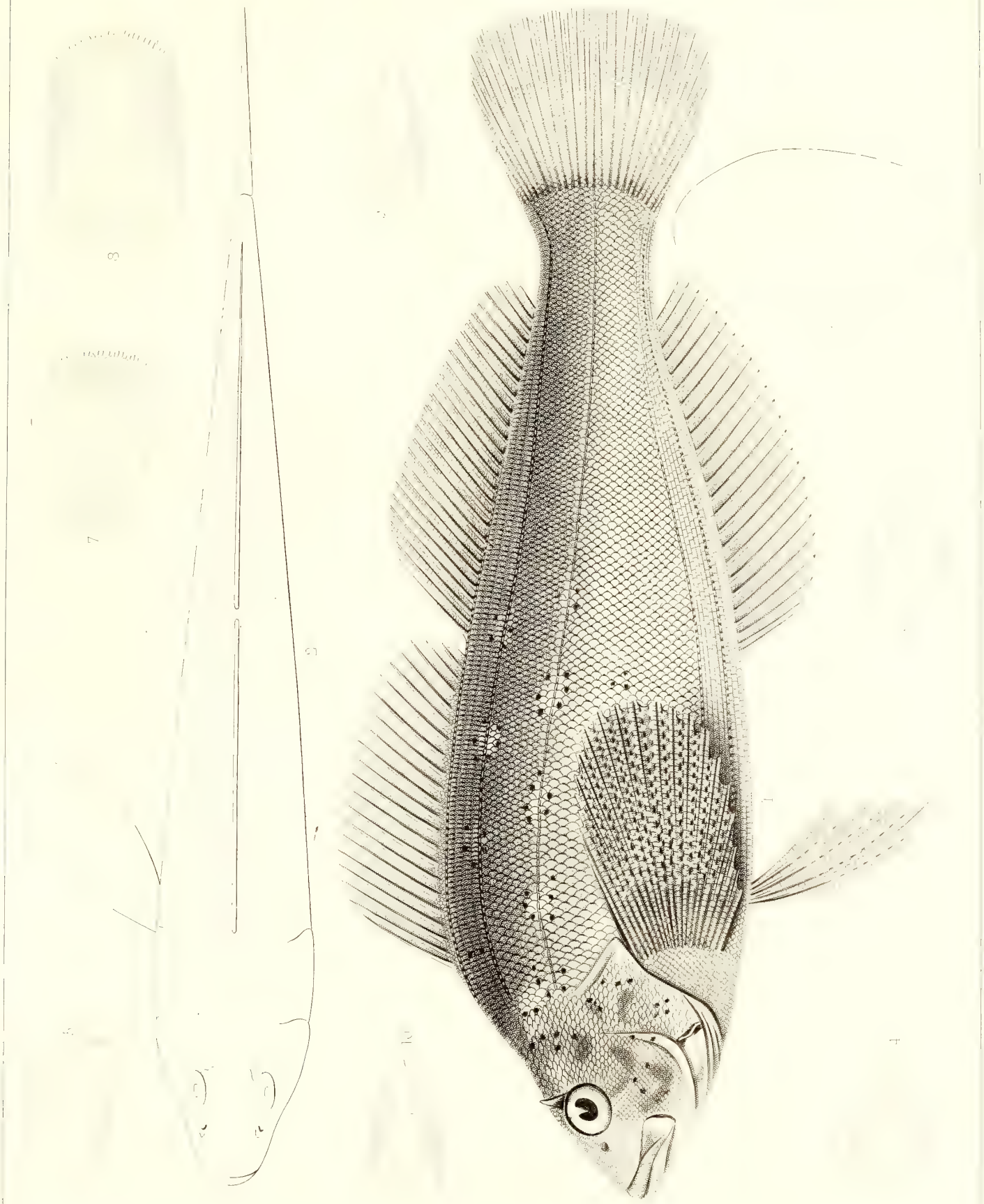


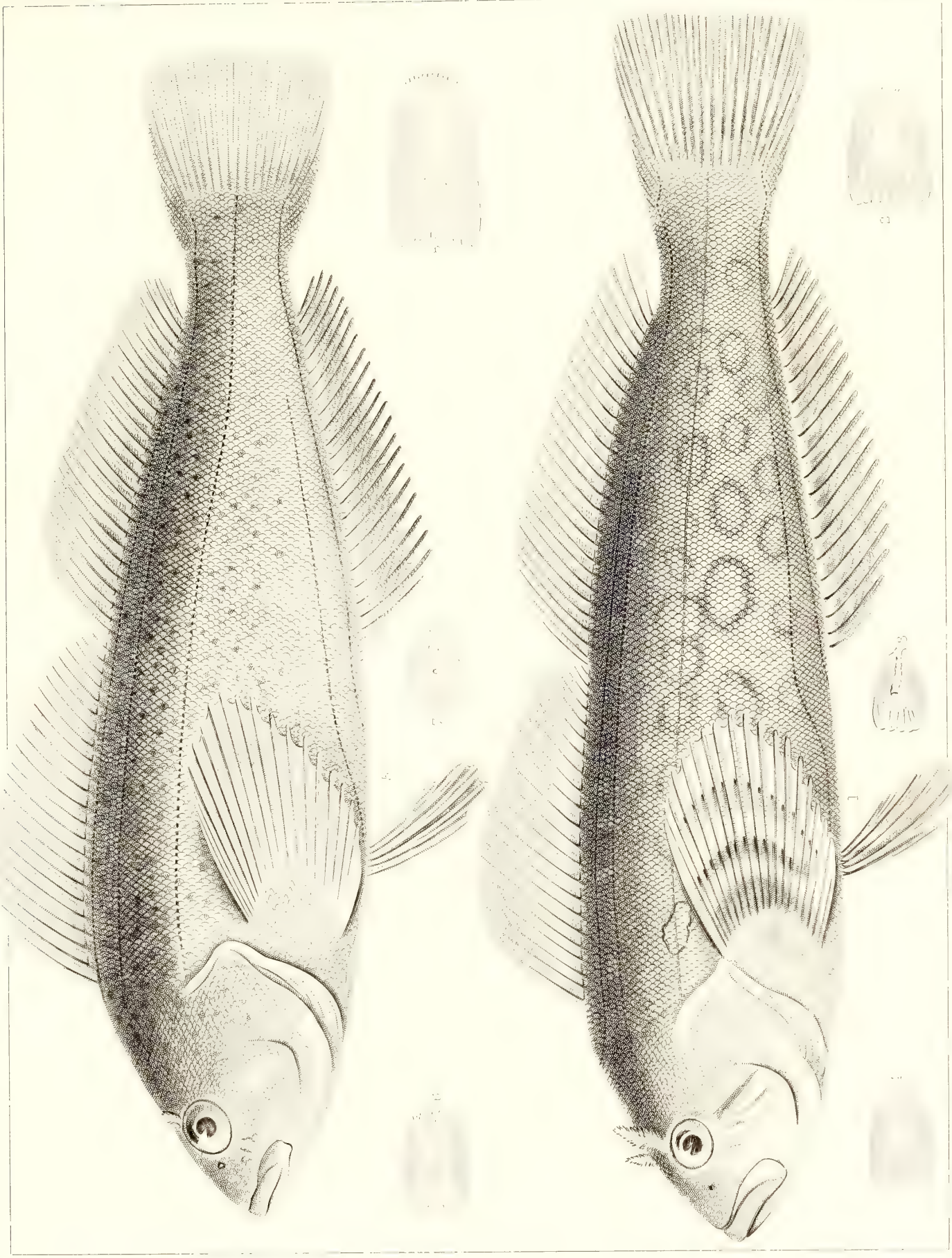


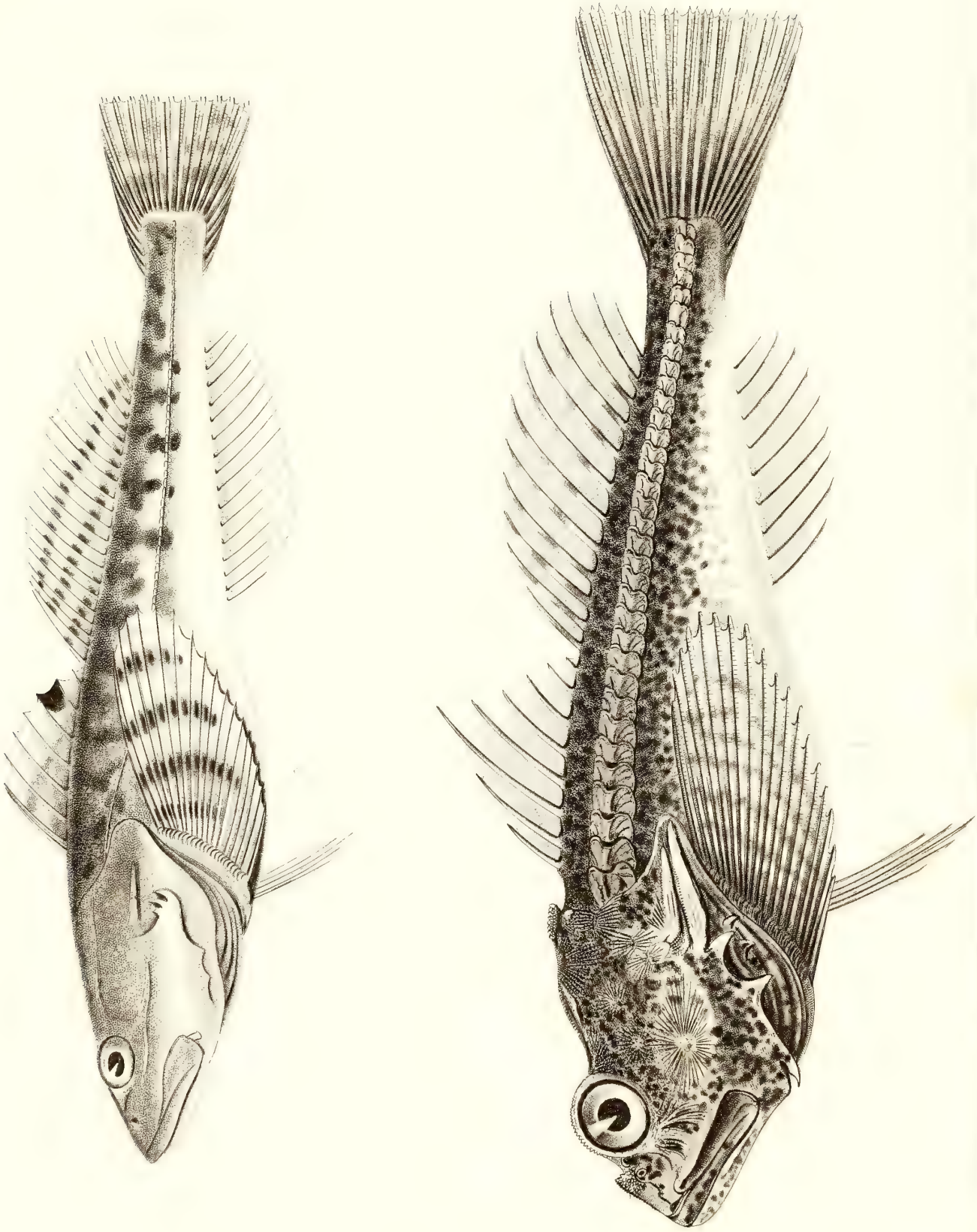
J. H. Richard del. F. Artos

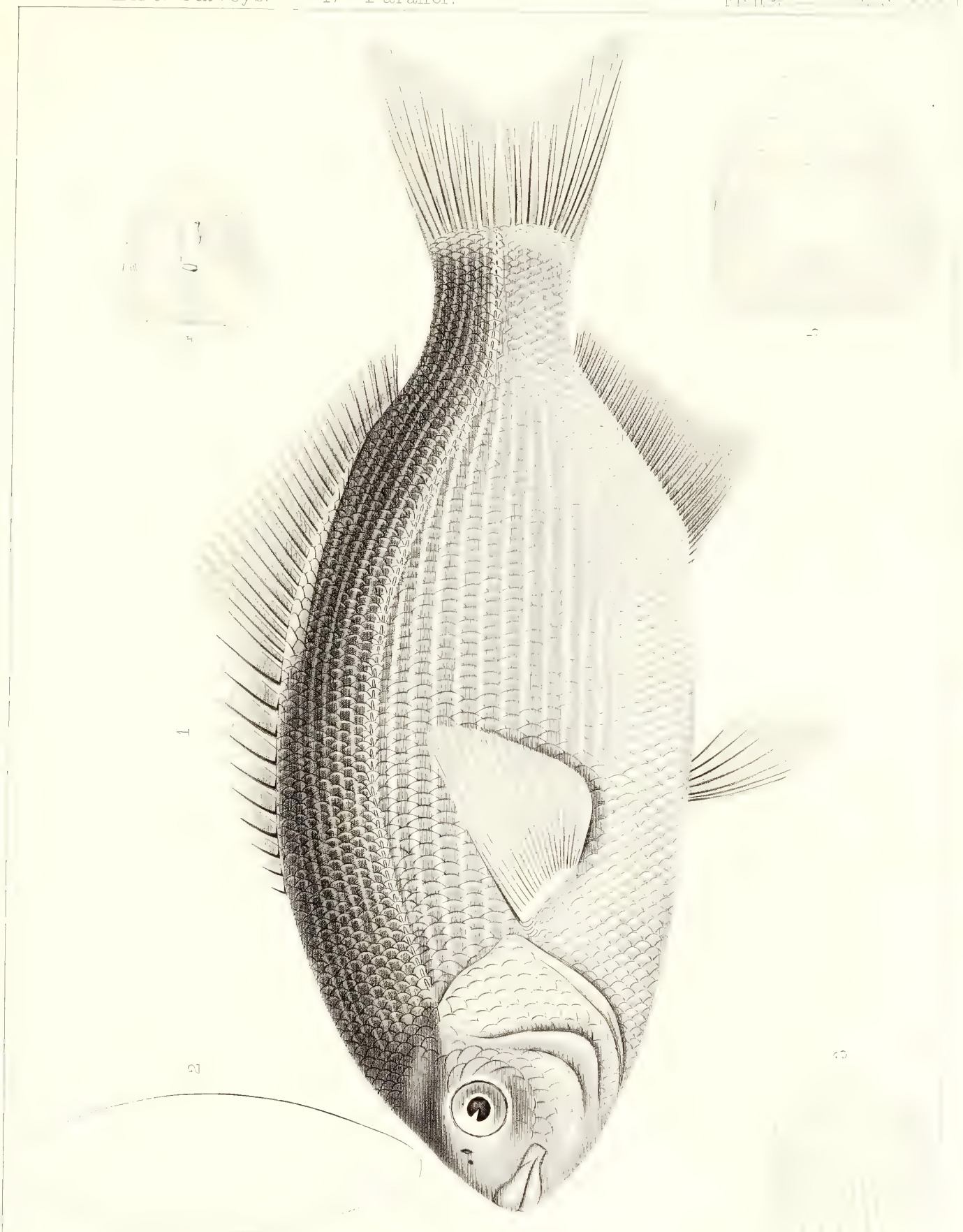


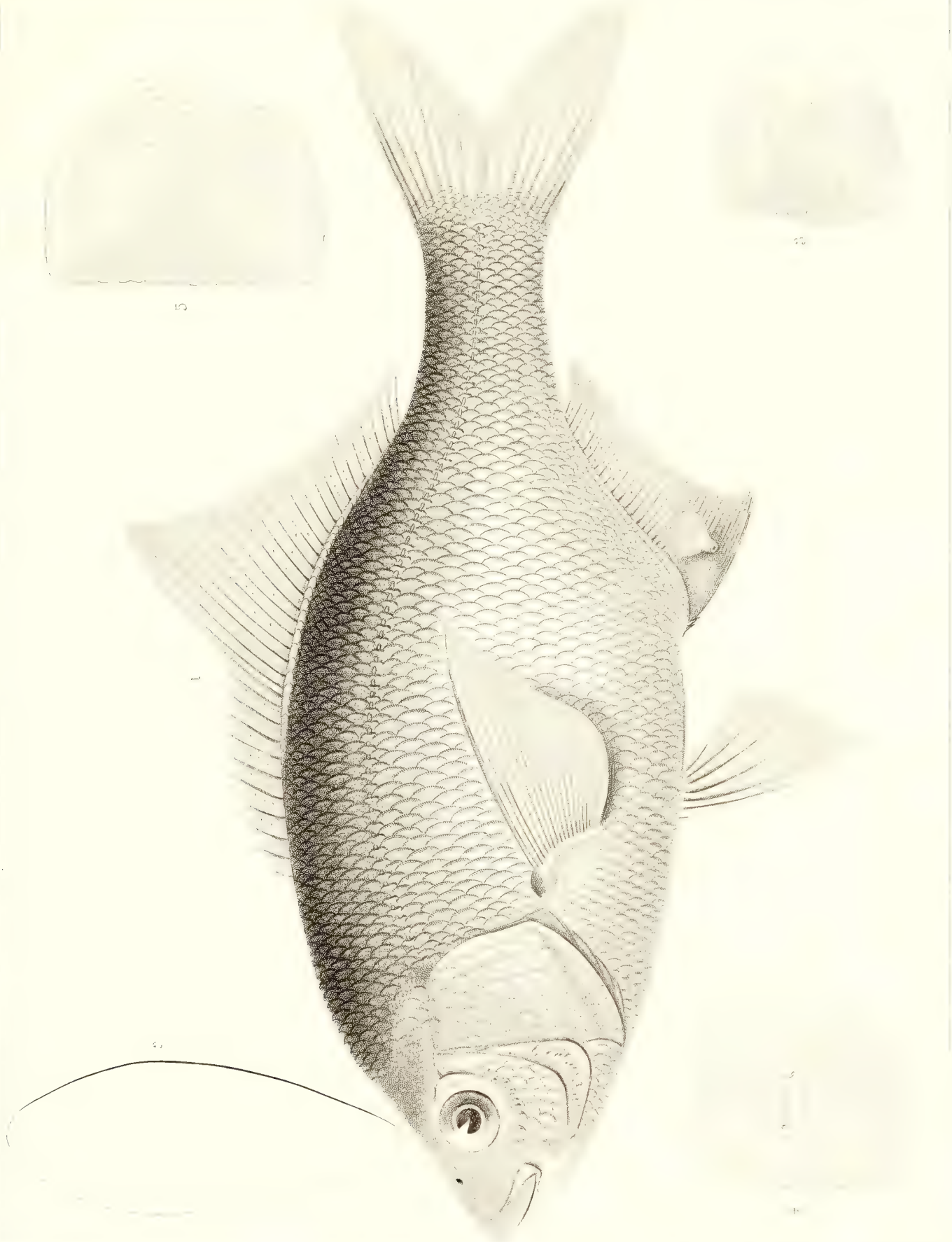


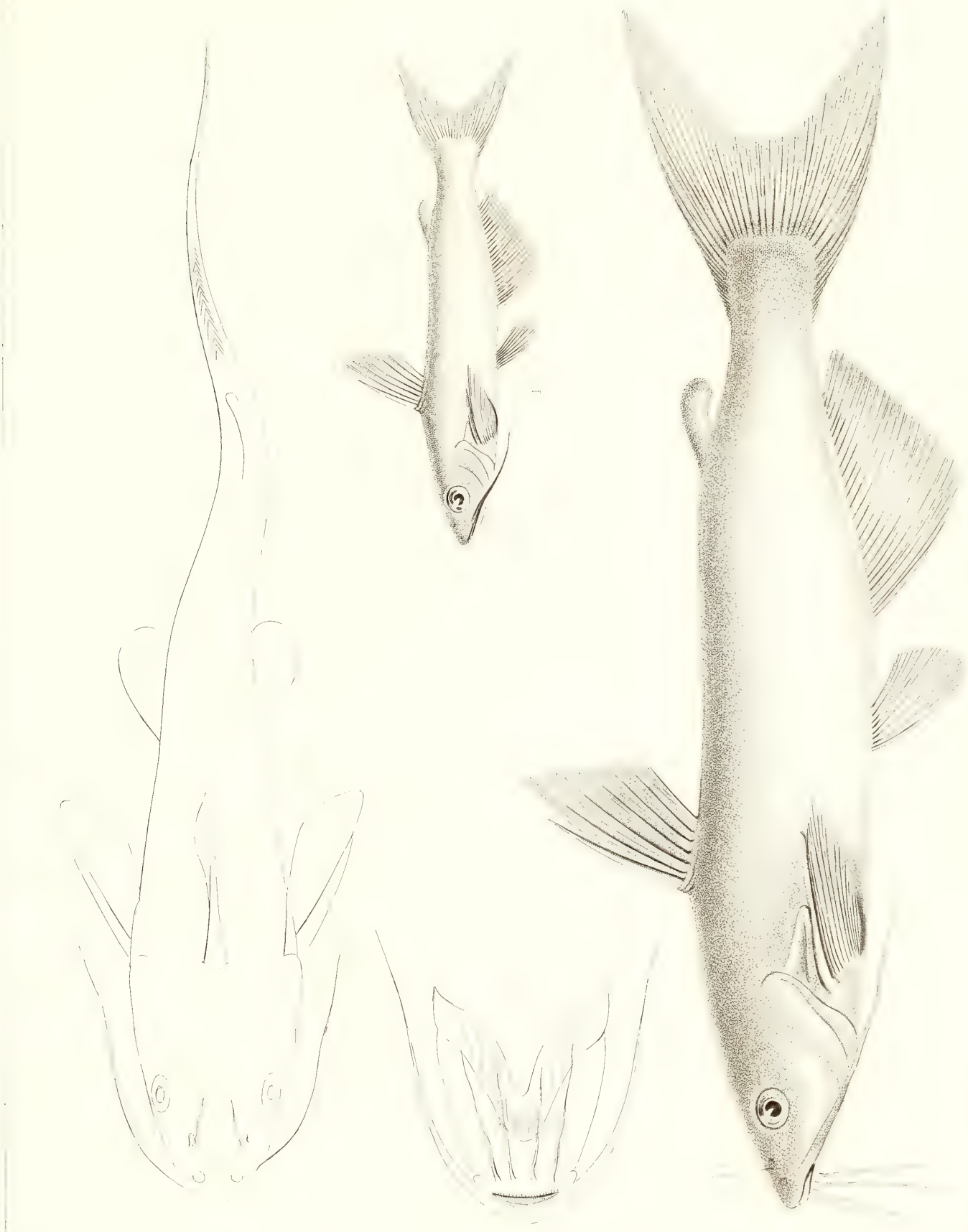




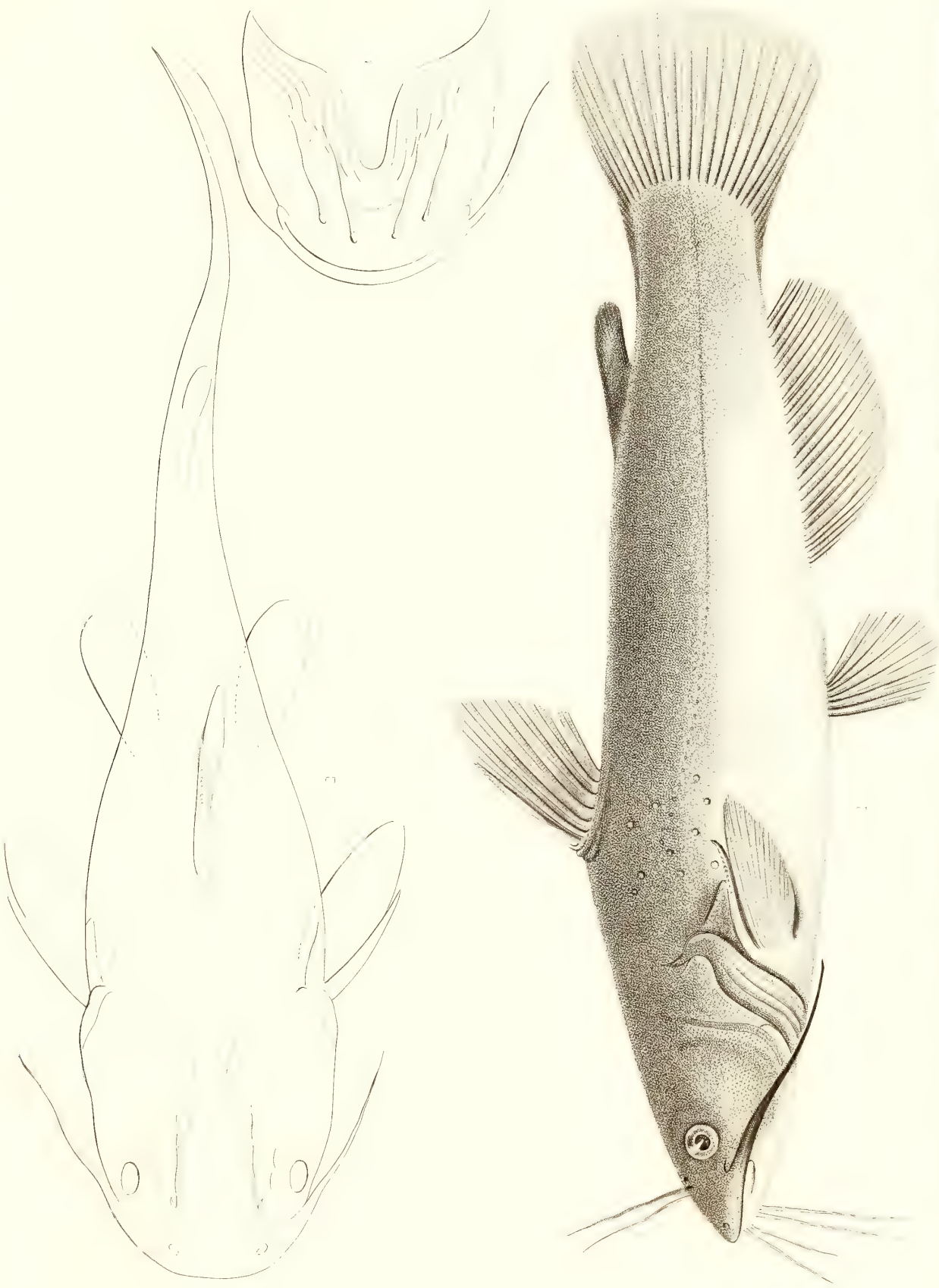




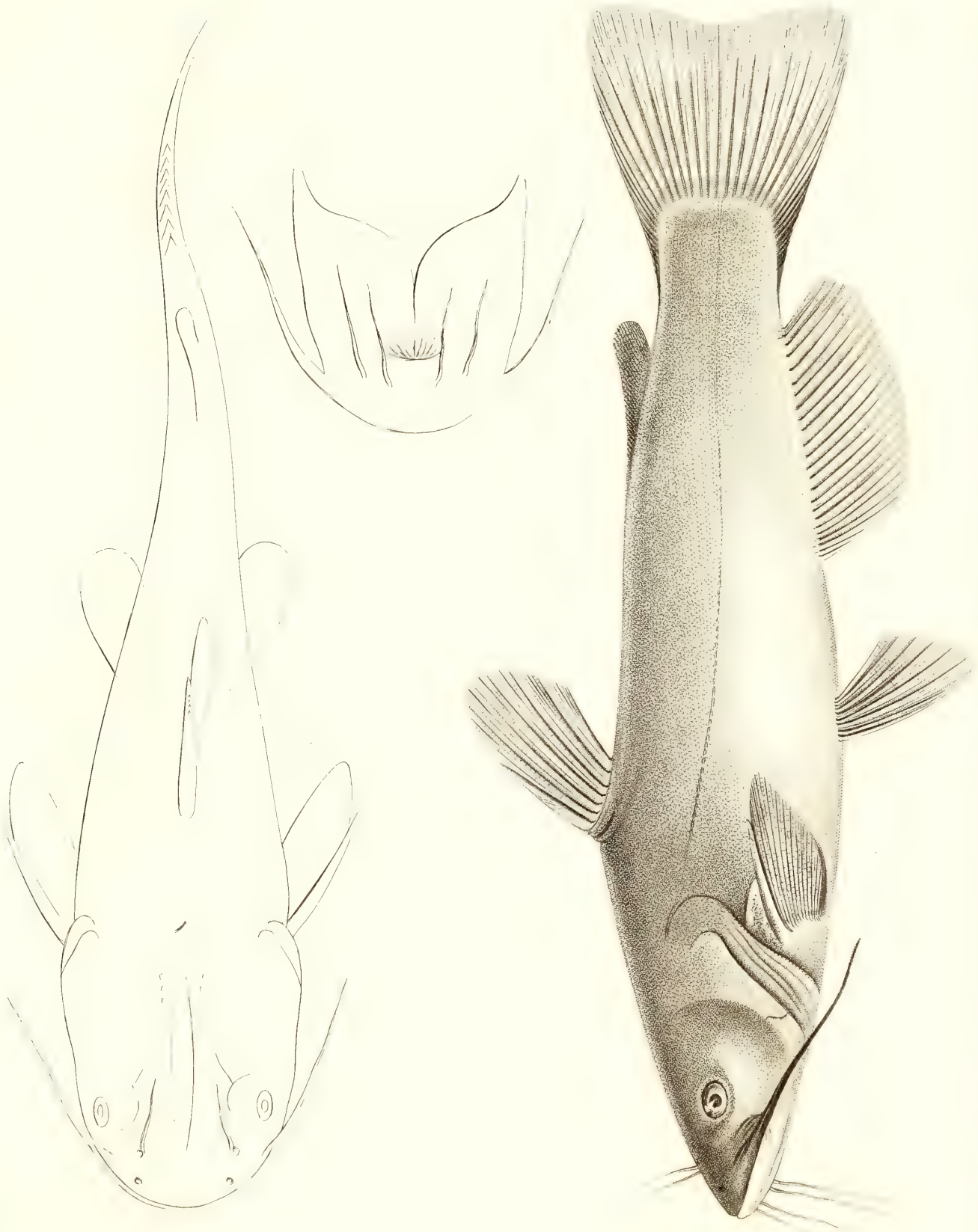




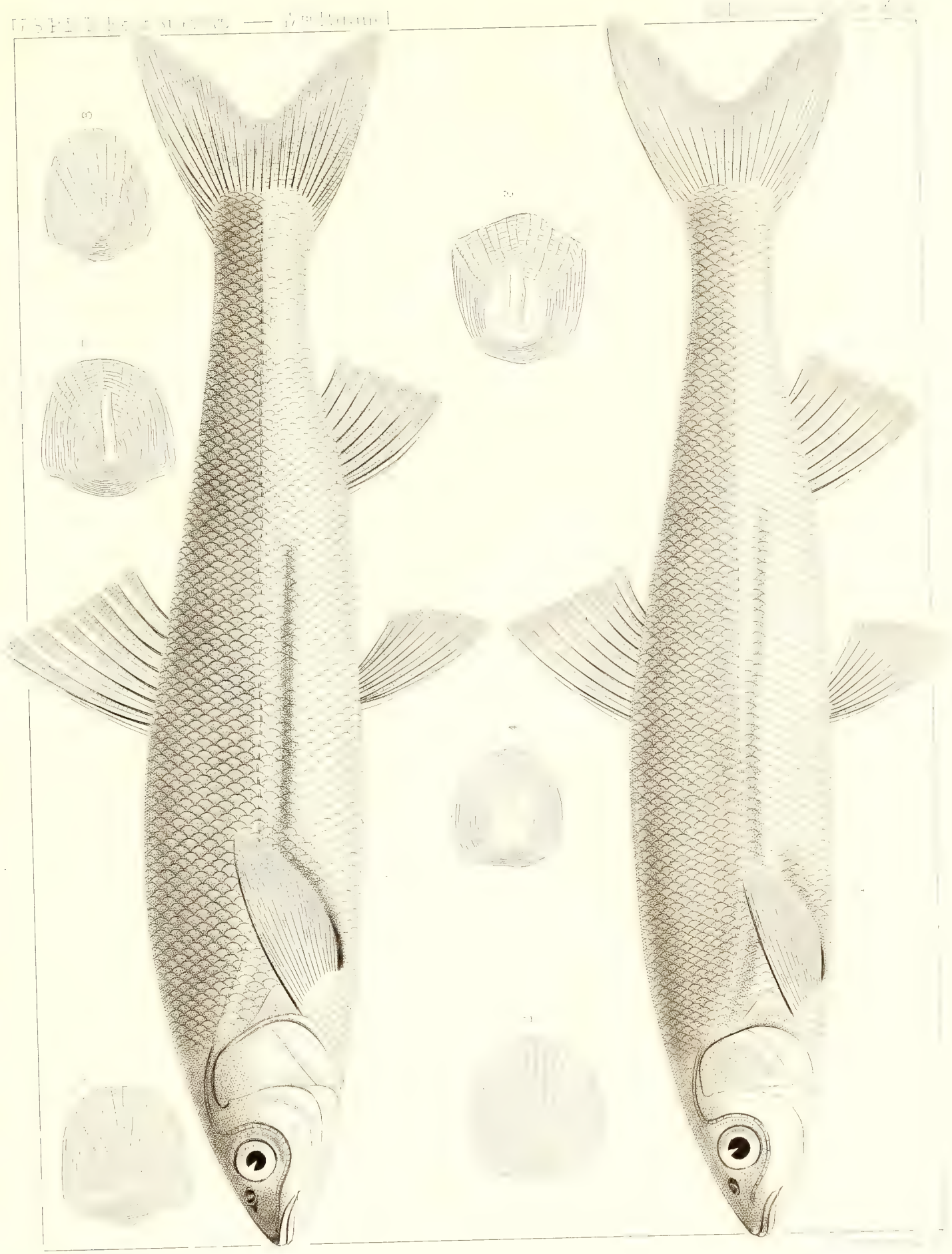
J. H. Richard del.



J.H.Richard del



J.H.Richard del.



J. H. Richard del

4
5
1
2
3

No. 6.

REPORT UPON THE MOLLUSCA COLLECTED ON THE SURVEY.

BY WILLIAM COOPER.

Class **MOLLUSCA**.—Shell-fish.

Family MURICIDAE.

MUREX FOLIATUS.

Murex foliatus, GMEL. Desh. Reeve, C. J. III, 12.
Murex monodon, ESCH. Zool. Atlas, Pt. II, p. 10, pl. 9, 10, f. 1, 1829.
Cerastoma monodon, CARPENTER, Report to Brit. Assoc. 1856, p. 345.
Cerastoma foliatum, IDEM l. c.

Hab.—Sitcha; Eschscholtz. Oregon; Kellett and Wood in Carp. p. 241. San Diego, (fossil?); Mr. Cassedy.

Sent from San Diego by Mr. Cassedy. Like others from the same locality which have been also found living, and some very remarkable species that have not, these specimens have the appearance of fossil shells. Eschscholtz collected it at Sitcha, in lat. 58°, as quoted by Reeve, though the name he gives is omitted by the latter.

MUREX FESTIVUS.

Murex festivus, HINDS, Zool. Sulphur, pl. 3, f. 13, 14.—REEVE, C. I. Murex, pl. xxvi, f. 114.
Pteronotus festivus, CARP. Rep. Brit. Assoc. 1856, p. 345.

Hab.—Bay of Magdalena; Hinds. San Diego; Mr. Cassedy.

This well marked species, which was dredged alive by Mr. Hinds in the Bay of Magdalena, is found of much larger size at San Diego. Only dead shells were sent, appearing like fossil or much weathered shells, but otherwise they entirely agree with Reeve's figure.

TRITON OREGONENSE.

Triton oregonense, REDFIELD, in Ann. Lyceum of Nat. Hist. of New York, IV, p. 165, pl. II, f. 2, (young?) 1839.
Tritonium (Buccinum) cancellatum, MIDDENDORFF, Beitrage, II, p. 164, pl. III, f. 1–4, (adult and young,) excl. syn. Lam. 1849.
Fusus oregonensis, REEVE, C. I. pl. xvi, p. 61, (young,) 1845.
Fusus cancellatus, REEVE, l. c, p. 62, (adult.)
Triton oregonense, GOULD, U. S. Expl. Exped. Moll. & Shells.
Triton cancellatum, (oregonense,) CARP. Rep. p. 338.

Hab.—Straits of Juan de Fuca; Dr. Suckley, Mr. Gibbs, Dr. Cooper. Unalashka; Middendorff. Kamtschatka; Reeve.

Among the specimens from the Straits of De Fuca is one adult shell, exhibiting the tooth or fold on the upper part of the columella, as it appears in Middendorff's plate, the absence of

which in his specimen was relied upon by Mr. Redfield as a good means of distinguishing his species from *Triton cancellatum* of Lamark. Dr. Gould, from the notes of Mr. Couthouy and Dr. Pickering, has described the animal of each, the one collected at the Straits of Magellan and the other at Puget Sound, considering them entirely distinct.

Reeve, and Dr. Gould after him, quote Jay as the author of the species, and original describer in the annals of the Lyceum of New York. Middendorff and Carpenter call the author Say. The credit is really due to Mr. J. H. Redfield, as above cited.

CHRYSODOMUS ANTIQUUS.

Chrysodomus antiquus, SWAINSON? Carpenter, Rep. p. 343.

Murex antiquus, LINN. Syst. Nat. ed. 12, L Gmel. ed. 13.

Fusus antiquus, LAM. An. sans vert, ed. 2, IX, p. 447.

Tritonium (Fusus) antiquum, MIDD. Malacol. Ross. II, p. 131.

Trit. (Fus.) antiquum, var. *Behringiana*, MIDD. Reise, II, 224, pl. x, f. 3.

Hab —Straits of Juan de Fuca; Dr. Suckley. Behring's straits; Middendorff.

But one specimen of this species was obtained, which agrees with the variety from Behring's straits represented by Middendorff in his Reise, though showing still less carination on the penultimate whorl. The figures of his "varietates Behringianæ," in the "Beitrage," represent a different but allied variety.

CHRYSODOMUS MIDDENDORFII, n. s.

Tritonium (Fusus) decemcostatum, MIDD (nec. Say) Beitrage, II, p. 138, pl. iv, fig. 15, (the sculpture only.)—CARP. Rep. p. 217. Omitted in his Gen. Catalogue, p 343.

Hab.—Straits of Juan de Fuca; Dr. J. G. Cooper. Kodiak, Kenai; Middendorff.

DESCRIPTION.—Shell light horn color, the ribs darker, within white, tinged with violet; solid, ventricose-fusiform, the whorls convex, planulate on the upper part, encircled with strong well marked and elevated ribs, three to four on the whorls of the spire, ten to twelve on the last whorl, some near the canal less distinct, with intervening striae, which are more distinct forward; canal somewhat curved, equalling in length about two-thirds the breadth of the aperture. Length, 2.6 inches; breadth, 1.5; length of aperture, 1.7 inch.

This species is strikingly different from *Fusus decemcostatus*, Say, in the convexity of *all* the whorls, as well as in the angle formed in the outer lip by the termination of the first rib. The upper part of the last whorl is planulate, meeting the whorl above nearly at a right angle, while in the eastern species the same part is broadly excavated, rising steeply towards the suture. In the latter the penultimate and smaller whorls are made concave by the excavation between the two ribs which they generally exhibit, while the new species shows four on the penultimate and three on the smaller whorls. In *F. decemcostatus* the first rib is stronger and more prominent than those below it, while in the new species it is less so. Philippi's figure of Say's shell represents a variety, and not the normal state of the species. Our specimen of the new species is furnished with twelve more or less distinct ribs. The eastern shell, (from the examination of one hundred and thirty specimens,) appears to have seldom more than seven to eight, rarely nine ribs.

Fusus spitzbergensis, Reeve, (in Belcher's Arctic Voyage, II, p. 395, pl. 32, f. 6, a. b.,) is an allied, but, judging from the figure and description of Mr. Reeve, a very different species.

A single specimen collected by Dr. Cooper on the shore of Whidby's island, in the Straits of Fuca, with that described by Middendorff, are all at present known of this interesting species, first pointed out to me by Dr. Gould as the *F. decemcostatus* of Middendorff.

CHRYSODOMUS SITCHENSIS.

Chrysodomus sitchensis, Carp. Report to Brit. Assoc. 1856, p. 343.

Tritonium (Fusus) sitchense, Midd. Malacol. Ross. II, p. 149, No. 14; pl. 2, figs. 5—8.

Hab.—Straits of Juan de Fuca, Dr. Suckley, G. Gibbs, esq; Sitka, Midd. after Eschscholtz.

Specimens of both mature and young shells were brought from the Straits of Fuca, where it appears to be rare. They agree, in all respects, with Middendorff's plate and description.

Family BUCCINIDÆ.

NASSA MENDICA.

Nassa mendica, Gould, U. S. Expl. Exped. Mollusc & Shells, p. 263, and Atlas, fig. 331.

Hab.—Puget Sound, Dr. G. Suckley.

This as well as the following species appear to be rare.

NASSA GIBBSII, n. s.

Description.—Form short and moderately ventricose; whorls, six; the body whorl nearly equalling the spine in length, all cancellated, longitudinally ridged. Ridges, about 13 on each whorl, the intermediate furrows deep and equal in width to the ridges. Mouth subovate, canal spirally twisted.

Colors.—Inside of mouth dark purplish; epidermis smooth; olivaceous brown. Indistinct bands visible inside, which, under the epidermis, are found to be black or brown, varying in width and number, one usually distinct around the middle of whorl. Long. 0.40, lat. 0.25.

Five specimens of this Nassa more resemble *N. trivittata* than *N. mendica*, having the banding and shorter form of the former, their breadth being equal, but length proportionately much less than the latter, and, though smaller, their ridges are more strongly marked. Found dead along the shore at Port Townsend, Puget Sound. One only has a fresh appearance.

PURPURA LACTUCA.

Murex lactuca, Eschscholtz, Zool. Atlas, II, p. 9; pl. ix, fig. 3, 1829.—Midd. Beitrage, II, p. 120.

Murex ferrugineus, accidental variety, Idem, id. pl. ix, p. 3.

Purpura septentrionalis, Reeve, Con. Icon. pl. x, p. 50.—Jay, in App. to Perry's Exp. to Japan, vol. II, pl. 5, figs. 16, 17.—Carpenter, Rep. to Brit. Assoc. p. 340.

Muricidea lactuca, Carpenter, Report, p. 345.

Hab.—Sitka, Eschscholtz; Puget Sound, Dr. Suckley & Mr. Gibbs; Shoalwater bay and Straits of Fuca, Dr. Cooper.

This is a remarkable and abundant species, which, with Reeve, we prefer to place in the genus Purpura. Like others of that genus, it is subject to many variations, of which analogous examples may be observed in *P. lapillus* more especially. The figures given by Eschscholtz, Jay, and Reeve, represent three of these varieties, the first being at one, and the third at the other extreme of the series. After a careful comparison of more than two hundred individuals, from various localities in Washington Territory, we find the gradation from one to the other so regular that we are forced to refer them all to one species, first established by Eschscholtz.

"This shell abounds in the middle parts of Shoalwater bay on rocks and oyster-beds, and also in the deeper parts of Puget Sound. It appears to feed on oysters and other animal substances. I have found one adhering to an oyster, which was perforated by a small, round hole near the apex, and through which the 'periwinkle,' as they are popularly called, appeared to be devouring the animal. They can live several days out of water in damp places.

"The amount of rugosity seems to depend entirely upon the *station* the specimens are found

in. I obtained the most perfect adhering to rocks below low water, in a place where they were not likely to be rolled. Those found on oyster-beds are usually smooth, even when quite small.

"The form, also, seems to vary considerably in different localities; some from Puget Sound being much larger and more elongated, though found also of the usual form near by."—J. G. C.

PURPURA OSTRINA.

Purpura ostrina, Gould, Expl. Exped. Shells., p. 244.—Idem Atlas, fig. 310; Carp. Rep. p. 340.
"*Purpura Freycinetii*," Middend.; non Desh.
Purpura decemecostata, Midd. Beitrage II, 116; pl. ix, f. 1, 2, 3.

Hab.—Straits of Fuca; Puget's Sound; Dr. Cooper.

Quite a different species from *P. Freycinetii*, of Deshayes, with which it was confounded by Middendorff, though he also named and described it as new. Whether his or Dr. Gould's name has the priority I have not the means of deciding. On rocks above low water mark, from the mouth of Hood's Canal to Straits of Fuca; common.

PURPURA LAPILLUS.

Purpura lapillus, Linn, Midd. Gould, Carpenter; op. cit.

Hab.—Sitka Ochotsk; White sea; Middendorff. Straits of Juan de Fuca; Puget's Sound; Dr. Cooper.

Equally common with the last species, and found together with it.

PURPURA EMARGINATA.

Purpura emarginata, Desh. Rev. Zool. 1839.—Magasin de Zool. Moll. pl. 25; 1841.—Reeve, C. I. Pruss. x, p. 46.—Carp. Rep. p. 340.
Purpura Conradi, Nutt. Mss., Jay's Catal. No. 8972.

Hab.—Upper California: Dr. Trask. San Diego; Lieut. Trowbridge.

This shell is, no doubt, a California species, whence several were sent by Dr. Trask. Mr. Reeve mentions specimens in the British Museum, collected by Mr. Nuttall in that country. There is probably an error in M. Deshayes statement that it inhabits New Zealand.

MONOCEROS ENGONATUM.

Purpura (*Monoceros*) *engonata*, Conr. in Journ. Acad. Phila. VII, p. 26; pl. 20, p. 17.
"*Monoceros engonatum*, Conr." Carp. Report, p. 201.
"*Monoceros unicarinatum*, Reeve, C. I. sp. 1; new, pl. I, f. 1; nec. syn. pl.; non Sowb. nec. Desh."—Carp. Rep. 201.
"*Monoceros unicarinatum*, Sowb. var." Jay, Cat No. 9067. N. B.—The type is quoted by Dr. Jay as synonymous with *Purpura spirata*, Blainville

Hab.—Bay of San Pedro, Upper California; Dr. Trask. Santa Barbara; Nuttall.

From the above citations, which might be further extended, it will be seen that there is much difference of opinion concerning the synonymy of this species. Our specimens, of which four were sent by Dr. Trask, agree entirely with Mr. Conrad's figure and description. They differ materially from Kiener's figure of *Purpura spirata* from the Sandwich Islands, and still more from Reeve's figure 2, specimen 1, of his plate I. At the same time they are possibly identical as species. This was first published by Mr Conrad in 1837.

MONOCEROS LAPILLOIDES.

Purpura (Monoceros) lapilloides, Conr, Journal Acad. Phil. VII, p. 264, pl. 20, fig. 18, 1837.

Monoceros punctature, Gray, in Zool. Voyage of Blossom, 1839.—Reeve C. I. pl. 1, f. 1, species 2, Jay Cat. No. 9065.

Hab.—Bay of San Pedro, Dr. Trask; Santa Barbara, Nuttall.

Very different from the preceding species, as shown in our specimens, although Mr. Carpenter is inclined to consider them, with *M. uniden* Conr. as three varieties of the same. The published figures represent, it is true, what might be regarded as intermediate states of one species.

COLUMBELLA GAUSAPATA.

Columbella gausapata, Gould, Proceed. Bost. Soc. Nat. Hist., III, p. 170, June, 1850.—Idem, U. S. Expl. Exped. Mol. & Shells, p. 369.—Atlas, fig. 337, Carp. Rep. p. 341.

Hab.—Oregon, Gould; Straits of de Fuca, Dr. Suckley.

COLUMBELLA VALGA.

Columbella valga, Gould, Proceed. Bost. Soc. III, p. 169.—Idem, Exped. Shells, p. 269.—Atlas, pl. 6, 338.

Hab.—Straits of de Fuca, Dr. Suckley.

The specimens sent of these two species were few and imperfect.

Family NATICIDÆ.

NATICA LEWISII.

Natica lewisii, Gould, in Proceedings Bost. Soc. II, p. 239, 1847.—Id. in U. S. Expl. Exped. Mollusca & Shells.

Natica herculea, Middendorff, Beiträge Mal. Ross, II, p. 97, pl. vii, f. 5–7, 1849.

Natica herculea, Carpenter, Rep. to Brit. Assoc. 1836, p. 336.

Natica lewisii, Carpenter, Rep. to Brit. Assoc. 1836, p. 336.

Hab.—Puget Sound, Washington Territory, Dr. J. G. Cooper, Dr. G. Suckley; Bodega bay, Cal., Middendorff.

This fine large species, the western analogue of our *N. heros*, varies considerably in form, being sometimes remarkably globose, and at others with the spire much produced. Mr. Carpenter has erred in assigning the priority to Middendorff's name, his second volume, which contains the shells, being dated two years after Dr. Gould's publication. The name of the first explorer and collector in Oregon merited such a perpetuation.

"This large shell is abundant throughout the northwest sounds, and is collected in great numbers by the Indians for food. From May to August it may be found crawling out above high water mark to deposit its eggs, which are enclosed in a curious structure of sand, shaped like a shallow bowl without a bottom, or still more like some glass lamp shades, and beautifully symmetrical, smooth, and perfect on *both sides*."—J. G. C.

Family CERITHIADÆ.

POTAMIS PULLATUS.

Potamis pullatus, Gould, in App. to Report of Explorations in California, vol. V, p. 333, pl. xi, f. 23, 24.

Cerithidæ pullata, Carp. Rep. to Brit. Assoc. 1856, p. 325.

Hab.—Upper California, Dr. Trask.

This species, which occurs in several localities on the coast of California, appears to vary in the number of varices, relative length, and other minor particulars.

Family MELANIADÆ.

MELANIA PLICIFERA.

Melania plicifera, LEA, on fresh water and land shells in Trans. Phil. Soc. of Phil., pl. xxiii, f. 90.—CARPENTER'S Report, p. 325.

Hab.—Very common in rivers of Washington Territory.—J. G. C.

MELANIA SILICULA.

Melania silicula, GOULD, Proceed. Bost. Soc. II, p. 224, 1847; Exped. Shells, 46. Carp. Rep., p. 325.—IDEM, Expl. Exped. Shells, p. 141, fig. 164.

Hab.—Rivers of Washington Territory, Dr. Cooper; Nisqually and Oregon, Dr. Gould.

MELANIA SHORTAENSIS.

Melania Shortaensis, LEA, in literis.

Hab.—Willopah river, Dr. Cooper.

AMNICOLA NUTTALLIANA.

Paludina Nuttalliana, LEA, in Philos. Trans. pl. xxvi, f. 89.

Hab.—Columbia river, Dr. Cooper.

AMNICOLA SEMINALIS.

Paludina seminalis, HINDS, Zool. Sulph. p 59, pl. 16, f. 22.

Bithinia seminalis, CARP. Rep. p. 326.

Hab.—Upper California, Dr. Trask.

Family TURRITELLIDÆ.

TURRITELLA ESCHRICHTII.

Turritella eschrichtii, MIDDEND. Beitrage, II, p. 68, pl. xi. f. 1; Carp. Rep. 325.

Hab.—Puget Sound, Dr. Suckley, G. Gibbs, esq.; Arctic Sea, Middendorff.

A few specimens sent from Puget Sound agree in all respects with the figure and description given of this species by Middendorff, as cited above.

Family LITTORINIDÆ.

LITTORINA RUDIS.

Littorina rudis, GOULD, Stimpson, Shells of New England.

Littorina Barclayan? HINDS.

Hab.—Shoalwater bay to Straits of Fuca, Dr. Cooper, Dr. Suckley, G. Gibbs, esq.

Very abundant on the northwest coast, where it presents the same varied appearances as our eastern shell.

LITTORINA SCUTULATA.

Littorina scutulata, GOULD, Proceed. Bost. Soc. III, p. 83, March, 1849, Exped. Shells, p. 83.—IDEM, U. S. Expl. Exped. Moll. & Shells, p. 200, fig. 241.—CARP. Rep. p. 326.

Hab.—Puget Sound, Dr. Cooper; Puget Sound, Oregon, Dr. Pickering.

On rocks from the head of Puget Sound to the Straits of Fuca, having habits similar to those of *L. rudis*.—J. G. C.

LITTORINA PLANAXIS.

Littorina planaxis, NUTT. Sup. PHILIPP. Abbaldingen T. II, p. 201; Litt. Pt. IV, p. 16. Carp. Report, p. 326.

Hab.—San Luis Obispo, Dr. Antisell.

Family TURBINIDÆ.

TROCHUS FILOSUS.

Trochus filosus, Wood, Ind. Test. Supp. pl. 5, f. 23, 1828.—Carpenter, Rep. Brit Assoc p. 320.
Trochus ligatus, Gould in Proceed. Bost. Soc. III, p. 91, 1847.—Exped. Shells, p. 185, fig. 207.
Trochus modestus, Midden.? Beit II. pl. 85, p. X, f. 16, 17, 18, 1849.
Hab.—Straits of De Fuca, Dr. Cooper; Upper California, Dr. Trask.

Not very common. *T. modestus* of Middendorff is considerably smaller, but otherwise much resembles this species.

29. TROCHUS SCHANTARICUS.

Trochus schantaricus, Midden. Beitrage II, 85, 12.—Idem, Reise, p. 204, pl. xviii, f. 1–7.
Hab —Straits of Fuca, Dr. Cooper; Schantar islands in Sea of Ochotsk, Middendorff.

This small species appears to be abundant in the above locality, and numerous specimens were collected. They all exhibit more or less perfection beneath, and are uniform in size, which is much less than *T. filosus.* In other particulars the two are nearly allied.

Family HALIOTIDÆ.

HALIOTIS KAMTSCHATKIANA

Haliotis Kamtschatkiana, Jonas, Reeve, Con. Icon. III, f. 8.—Carpenter, Rep. p. 320.
Hab.—Nootka Sound, Captain Russell.

Several specimens of this beautiful species of Haliotis were brought from Nootka Sound by Captain C. J. W. Russell, of which four were presented to us by Dr. Trask.

Young shells of *H. rufescens* bear considerable resemblance to this species, for which there is reason to think they have sometimes been mistaken. Among numerous specimens of Haliotis, sent to the Smithsonian Institution from different localities on the coast of California, I find none of this species from any more southern points than that given above, in latitude 49°. Mr. Carpenter also considers it doubtful as a California species.

Haliotis corrugata, H. splendens, H. rufescens, and H. Cracherodii were sent from San Diego by Mr. Cassedy. *H. californiensis* must be rare, as none were obtained by any of our collectors or correspondents.

Family FISSURELLIDÆ.

FISSURELLA NIGROPUNCTATA.

Fissurella nigropunctata, Sowerby, Reeve, op. cit.
Hab.—Santa Catalina, Dr. Trask; Gallapagos, Cuming; Panama, C. B. Adams.

Two specimens of this shell, hitherto only found in the Panama province, were sent by Dr. Trask as coming from the island of Santa Catalina, near the coast of Upper California.

FISSURELLA ASPERA.

Fissurella aspera, Eschscholtz, Carp. Rep. 320, (*Glyphis.*)
Fissurella cratilia, Gould?
Fissurella denseclathrata, Reeve?
Hab.—Upper California, Lieut. W. P. Trowbridge; Puget Sound, Dr. Gould.

Family PATELLIDÆ.

Very few shells of this family were collected. Among the imperfect specimens, of which they mostly consist, we can recognize, with some doubt, the following species, adopting the nomenclature of Mr. Carpenter, the best authority upon this branch of conchology. For an extended synonomy the reader is referred to his excellent "Report to the British Association, 1857."

NACELLA INSTABILIS, ACMÆA PELTA, A. PERSONA, A. SPECTRUM, A. SCABRA, A. ÆRUGINOSA, SCURRIA MITRA.

Family CHITONIDÆ.

We find in the collections sent home still fewer materials, either specimens or notes, relating to this family than to the previous one. The following were identified, and are chiefly from the coast of Oregon:

CHITON MUSCOSUS, C. SUBMARMOREUS, C. TUNICATUS, C. LIGNOSUS.

Family HELICIDÆ.

HELIX FIDELIS.

Helix fidelis, GRAY, in Proceed. Zool. Soc. 1834, Carp. p. 314.
Helix Nuttalliana, LEA, in Philos. Trans. 1838, pl. XXIII, f. 74.
Hab.—Washington Territory, Dr. Cooper.

"This beautiful species is apparently limited to the forests west of the Cascade mountains, where it is common under evergreens in the drier situations. I have found one sticking to a small tree about three feet from the ground, but do not know of its ascending trees habitually. Its eggs, white, pellucid, and as large as a duck shot, are deposited in April under rotten wood. Young specimens are very rare. I found this shell throughout the valleys from Vancouver to the Straits of De Fuca, and more rarely near the coast, where it is smaller in size."—J. G. C.

HELIX TOWNSENDIANA.

Helix Townsendiana, LEA, in Trans. Philos. Soc. pl. XXIII, f. 80.—CARP. Rep. p. 314.
Hab.—Washington Territory, Dr. Cooper.

"This is the most abundant species, especially along the coast, where, unlike most of our American forest snails, it frequents open prairies among the fern. It is particularly abundant on low, sandy bars just above high tide, which are covered with a deep, rich deposit of shell marl, and have been formerly favorite camping grounds of the Indians. These places, being very productive, are much cultivated by the whites; and immense numbers of this animal's shells are found when the grass and bushes are first burnt off. They continue to live in potato fields in the same places. The bare face of Cape Disappointment fronting the ocean is also a locality. I did not find this species about Puget Sound."—J. G. C.

HELIX COLUMBIANA.

Helix columbiana, LEA, in Trans. Philos. Soc. pl. XXIII, f. 75.—CARP. Report, p. 314.
Helix labiosa, GOULD, U. S. Expl. Exped. Moll. and Shells.
Hab.—Washington Territory, Dr. Cooper.

"This little species is found in wet stations about meadows, &c., from Vancouver to the coast, where it is most abundant, under drift logs, &c., high up on the meadows, which are occasionally overflowed by the tide. It is also rarely found under trees. I did not obtain any at Puget Sound."—C.

HELIX VANCOUVERENSIS.

Helix vancouverensis, LEA, in Trans. Philos. Soc. pl. XXIII, f. 72.

Hab.—Washington Territory; Dr. Cooper.

"*H. Vancouverensis* is found west of the Cascade mountains, most abundant under the alder groves along the coast in damp places; also occasionally with *H. Townsendiana.* The animal is entirely of a yellowish white color. Some are also found on Whidby's island."—C.

HELIX DEVIA.

Helix devia, GOULD, Exped., Shells, p. —.

Helix Baskervillei, PFR. REEVE, C. I. pl. —, f. —.

Hab.—Washington Territory; Dr. Cooper.

Inhabits damp woods near Vancouver. Only two specimens were found.—C.

HELIX TUDICULATA.

Helix tudiculata, BINNEY, Terrestrial Molluscs.

Hab.—Washington Territory; Dr. Cooper.

This is also a rare species in Washington Territory, and is found with the preceding.—C.

SUCCINEA NUTTALLIANA.

Succinea nuttalliana, LEA, Proc. Am. Phil. Soc., vol. II, p. 32; Trans. of ditto, vol. IX, p. 4; PFEIFFER, Mon. Hel. Viv. I, 523, III, 15; BINNEY, Terr. Moll. U. S. II, 81; pl. LXVIIa, fig. 4.

Found at Vancouver, where it is apparently rare, and was not observed alive.—C.

Family LIMACEÆ.

LIMAX COLUMBIANUS.

The Columbian Slug.

Limax columbianus, GOULD, in Binney's Terr. Moll. U. S., II, 43; pl. LXVI, fig. 1.—U. S. Ex. Exped. Moll., p. 3, fig. 1, a. b. c.

This large slug abounds in the dense damp spruce forests near the Pacific coast, and was not observed by me in the dry region east of the Cascade mountains. It is to be found during every month of the year in Washington Territory, being even more abundant in the rainy winter than in warmer seasons; its activity being checked only by severe cold, while it cannot bear continued drought.

It not unfrequently drops from the trees, but whether it ascends to any great height I have not observed. Though apparently offering a tempting meal to birds and other animals I never knew them to devour it.

This slug grows to the length of six inches, but shrinks to a third of that size in alcohol. Its

surface is smooth, not rugose, when alive, as represented in Dr. Binney's plate, and its color is a pale yellowish olive, usually more or less irregularly blotched with black.—C.

Family LYMNÆADÆ.

LYMNÆA UMBROSA.

Lymnœa umbrosa, GOULD.

Hab.—Lake Oyosa, on the Okanagan river, near lat. 49° ; Dr. Cooper.

LYMNÆA EMARGINATA.

Lymnœa emarginata, SAY.

Hab.—Lake Oyosa, Washington Territory ; Dr. Cooper.

LYMNÆA JUGULARIS.

Lymnœa jugularis, SAY.

Hab.—Lake Oyosa, Washington Territory ; Dr. Cooper.

PHYSA ELONGATA.

Physa elongata, SAY.

Hab.—Near Puget Sound ; Dr. Cooper.

PHYSA HETEROSTROPHA.

Physa heterostropha, SAY.

Hab.—Ponds in Washington Territory ; Dr. Cooper.

PHYSA BULLATA.

Physa bullata, GOULD, MS.

Hab.—Lake Oyosa, Washington Territory ; Dr. Cooper

ANCYLUS CAURINUS, n. s?

Hab.—Black river, near Puget Sound ; Dr. Cooper.

PLANORBIS CORPULENTUS.

Planorbis corpulentus, SAY.

Hab.—Lake Oyosa, Okanagan river; Dr. Cooper.

PLANORBUS TRIVOLVIS.

Planorbis trivolvis, SAY.

Hab.—Near Vancouver ; Dr. Cooper.

"Exceedingly abundant in shallow lakes about Vancouver, the dead shells lining the shores."—C.

PLANORBIS PLANULATUS, n. s.

Hab.—Lakes on Whidby's island ; Dr. Cooper.

A small carinated species, flat above, convex below, having much the appearance of a *valvata*, found only in lakes on Whidby's island, at the entrance of Puget Sound.

Family BULLIDÆ.

BULLA NEBULOSA.

Bulla nebulosa, GOULD, SOWERBY, Thes. f. 79,80.

Hab.—Bay of San Pedro; Dr. Trask.

BULLA TENELLA.

Bulla tenella, ADAMS, SOWERBY, Thes. pl. 134, f. 104.

Hab.—Puget Sound; Dr. Suckley.

The habitat of Adams' shell is not known. A specimen from Puget Sound agrees very well with Sowerby; figure and description quoted above.

Family OSTREIDÆ.

OSTREA EDULIS.

Ostrea edulis, LINN. LAM.

Hab.—Shoalwater bay Wash. Terr.; Dr. Cooper.—Straits of Fuca and Puget Sound; Mr. Gibbs.

"Oysters are rare on most parts of the northwest coast, but there are a few localities in which they are found in abundance. One of these is Shoalwater bay, a little to the north of the mouth of Columbia river, where are to be found the conditions requisite for their existence and multiplication. The markets of San Francisco and all the coast southward are supplied from this bay. The oysters obtained here appear to differ little, if at all, from the common oyster of Europe, and possess the same peculiar coppery flavor remarked in the European mollusc when eaten for the first time.

In Puget Sound small oysters are found near the mouth of the Nisqually river and some others, but nowhere large enough to be of much value. They are said to grow larger at Vancouver Island, and very large ones have lately been discovered near the mouth of Hoods' Canal."—C.

ANOMIA MACHROSCHISMA.

Anomia macroschisma, DESH. Rev. Zool. 369. Mag. Zool. Pl. 34.—MIDD. Beit. iii, 6. Idem Reise, p. 242, Pl. XIX. fig. 1—5.

Placunanomia macroschisma, CARPENTER, Rep. p. 312.

Hab.—Straits of Juan de Fuca; G. Gibbs, esq. Nootka Sound; C. J. W. Russell.

Several very perfect specimens were collected at the Straits of Fuca, and sent to the Smithsonian Institution by Mr. Gibbs.

PECTEN CAURINUS.

Pecten caurinus, GOULD Proceed. Bost. Soc. iii., p. 345. Exped. Shells. 95. U. S. Exploring Exped. Moll. & Shells, p. 458. Atlas, fig. 569. CARPENTER, Rep. p. 311.

Hab.—Straits of Fuca; Dr. Suckley. G. Gibbs, esq. Port Townsend, Admiralty inlet, Oregon; Gould.

This fine pecten is found of a much larger size than that described by Dr. Gould. Of ten specimens collected by Mr. Gibbs, and sent to the Smithsonian Institution, one measures twenty three inches in circumference, with a diameter of nearly eight inches, and some others are nearly as large.

PECTEN VENTRICOSUS.

Pecten ventricosus, SOWB. Thes. No. 19, pl. 12, f. 18, 19, 26.

Pecten tumidus, SOWB. (von Tuet. seec. Zeiten) Proc. Zool. Soc. London, p. 109, 1852 ?

Hab.—Upper California ; Dr. Trask. San Diego ; Mr. Cassidy.

Family MYTILIDÆ.

MYTILUS EDULIS.

Mytilus edulis, LINN., LAM, GOULD, MIDD., CARPENTER.

Hab.—Shoalwater bay ; Dr. Cooper.

"The common mussel of Europe and our own eastern coasts is found in Shoalwater bay in equal abundance, and presenting the same variations in color and markings as there. It is also common in the estuaries along the whole coast, and to the head of Puget Sound. They are eaten by the Indians, but less used than the large clams so abundant in the same places. I have also seen a very severe case of *urticaria* caused by eating them, probably from swallowing the beard. The same effect is sometimes observed in Europe and the United States."—C.

MYTILUS CALIFORNIANUS.

Mytilus californianus, CONR. Journ. Acad. Philad. VII, p. 242, pl. 18, f. 15.—CARPENTER, Rep. p. 309.

Hab.—Puget Sound, Port Townsend ; Dr. Suckley, Mr. Gibbs. Upper California ; Dr. Trask.

This shell ranges from California, northward, to the Straits of Fuca, and numerous specimens have been collected and sent to the Smithsonian Institution from various localities along the coast. Among them are some of all the various sizes, up to nine and a quarter inches long, but all exhibiting the peculiar marks described by Mr. Conrad. These characters are less obvious on the old and overgrown individuals, as might be expected, but, according to my observations, can always be traced.

MODIOLA CAPAX.

Modiola capax, CONRAD, Journ. Acad. Philad. VII, p. 242.—GOULD, CARPENTER, Rep. p. 309.

Hab.—Straits of Fuca ; Mr. Gibbs, Dr. Cooper.

"Not a common species in this locality."—C.

MODIOLA FLABELLATA.

Modiola flabellata, GOULD, U. S. Expl. Exped. Moll. & Shells, p. 453, fig. 561.—IB. Proc. Bost. Soc. III, 343.

Hab.—Straits of Fuca and Puget Sound ; G. Gibbs, esq.

This is a much larger and very different shell from *M. brasiliensis*, so common at Panama, with which Mr. Carpenter supposes it to be synonymous.—(Vid. Carp. Report, p. 210.)

LITHODOMUS.

A fine large species, unlike any described from this region, though approaching in some particulars *S. falcatus*, GOULD, was found in rocks near the mouth of the Umpqua river, Oregon, by Dr. Vollum, U. S. A., and sent to the Smithsonian Institution.

Family ARCADÆ.

ARCA GRANDIS.

Arca grandis, Brod. & Sowerby; Reeve, C. I., pl. —, f. 4.—Carpenter, Report, p. 310.
Hab.—San Diego; Mr. Cassidy.

A fine specimen of this remarkable *Arca*, preserved entire in alcohol, was sent to the Smithsonian Institution from San Diego by Mr. Cassidy, being the first instance in which it has occurred beyond the limits of the Panama province.

Family UNIONIDÆ.

MARGARITANA MARGARITIFERA.

Margaritana margaritifera, Lea, in Philad. Trans.
Mya margaritifera, Linn.
Margaritana fluviatilis, Schumacher.
Alasmodonta falcata, Gould, in Proc. Bost. Soc., N. H., III, p. 294.—Idem, U. S. Exploring Ex., Mollus. & Sh., pp. 433, 434—Carp. Report, p. 309.

Hab.—Chehalis and other rivers of Washington Territory, Dr. Cooper. Shasta river, Oregon, Dr. Trask.

After a careful comparison of specimens from the above localities with others from the Atlantic States, as well as from Newfoundland and Europe, we are brought to the same conclusion as Mr. Lea, namely, that the northwestern shell is at most a slight variety of the well known *M. margaritifera* of Linnæus.

"This is the most abundant of the fresh water bivalves, and the only one I have been able to find in the Chehalis, the streams emptying into Puget Sound, and most branches of the Columbia. No species is found in the streams running into Shoalwater bay. The Indians east of the Cascade mountains eat these, food of any kind being acceptable to most of them."—C.

ANODONTA ANGULATA.

Anodonta angulata, Lea, in Philos. Trans.
Anodonta fœminalis, Gould, U. S Expl. Exped. Moll. and Shells, 436.—Carp. Rep., p. 309.
Hab.—Yakima river, Washington Territory, Dr. Cooper. Walla-Walla river, Oregon, Dr. Pickering.

Several perfect specimens of various ages were brought by Dr. Cooper from the above locality, where it appears to be plentiful.

ANODONTA OREGONENSIS.

Anodonta oregonensis, Lea, Philos. Trans.; pl. xxi, f. 67.—Carpenter, Rep., p. 309.
Hab.—Rivers of Washington Territory; Dr. Cooper.

ANODONTA WAHLAMATENSIS.

Anodonta wahlamatensis, Lea, in Philos. Trans.; pl. xx, f. 64.—Carp. Rep., p. 309.
Hab.—Lagoons, Sacramento, Dr. Trask. Wahlamet river, Nuttall.

The Californian specimens sent by Dr. Trask are larger and finer than those from the more northern habitats.

Family CARDIADAE.

CARDIUM NUTTALLI.

Cardium Nuttalli, Conr. Jour. Acad. Phila. VII, p. 229; pl. 17, f. 3.—Middend. Beitrage, III, p. 39; pl. xvi, f. 1–5. Carp. Rep., p. 307.

Hab.—Shoalwater bay and Puget Sound; Dr. Cooper. San Francisco; Dr. Bigelow, Dr. Trask.

"This large shell is the most abundant of the clams in Shoalwater bay, and is very much used as food. It inhabits a mixture of sand and mud, a few inches from the surface, in all parts of the bay about half way between the shores and the large channels. The Indians are very expert in finding them, getting numbers where a stranger can see no sign of their existence, by feeling for them with a knife or flat stick. In July many come to the surface and die, perhaps from the heat of the sun."—C.

CARDIUM QUADRAGENARIUM.

Cardium quadragenarium, Conr. Jour. Acad. Phila. VII, p. 230; pl. 17, f. 5.—Carp. Rep. p. 307

Hab.—San Luis Obispo; Dr. Antisell, U. S. A.

A valve of this rare species was obtained by Dr. Antisell at the above locality.

Family LUCINIDAE.

LUCINA CALIFORNICA.

Lucina californica, Conrad, Jour. Acad. Phila. VIII, p. 255, pl. 20, fig. 1.—Carpent. Rep. p. 307.

Hab.—San Diego; Mr. Cassidy.

Family CYCLADIDAE.

CYCLAS, n. s.?

Dr. Gould enumerates two species of this genus from Oregon, *C. patella* and *C. egregia*. Not having met with any description, we are unable to determine whether either of them is identical with our's or not, or whether it may not be the same as one of our eastern species.

Hab.—Whidby's island, Straits of Fuca; Dr. Cooper. Pools near Steilacoom; Dr. Cooper.

Family VENERIDAE.

VENUS STAMINEA.

Venus staminea, Conr. Jour. Acad. Phila. VII, p. 250, pl. 19, fig. 14, 1837.

Venerupis petitii, Desh. Rev. Zool. p. 359, 1839.—Idem. Mag. de Zool. pl. 39, 1841.—Midd. Beit. III, 51, pl. XVII, fig 15–13.

Venus rigida, Gould, Proceed. Bost. Soc. N. H. III, p. 227, 1850.—Idem. U. S. Exploring Exped. Moll. and Shells, p. 420; Atlas, fig. 538.

Tapes diversa, Sowb. Thes. pl. 146, fig. 41. No. 65.—Carp. Rep. p. 306.

Tapes straminae, Carpenter, Rep. p. 196.

Saxidomus pelatii, Idem. Rep. p. 299.

Hab.—Shoalwater bay and Puget Sound; Dr. Cooper and Dr. Suckley. San Francisco; Dr. Trask. San Diego; Lieut. Trowbridge.

We have brought together the above synomomy after repeated examination and comparison of specimens from distant localities between the Straits of Fuca and San Diego. The northern shells are commonly but not invariably "ashy white," as described by Dr. Gould, some

exhibiting brown zig-zag marks, after the manner of the young *Venus mercenaria (V. notata*, Say.) Others from San Francisco, where they are sold in the markets as food, sometimes exhibit brown undulating cross lines, at others broad longitudinal bands. In size and outline they vary more or less, but in the characters of the teeth and hinge there is no material difference.

"*T. Straminea*, CONRAD?" of Sowerby, Thes. 72, fig. 151, is a different shell, which I have received from Panama, and consider it a variety of *V. histrionica*. Conrad has not used the name *straminea*. His name *staminea* is dropped by Carpenter in his general catalogue, *straminea* only being quoted.—(See Rep. 306.)

SAXIDOMUS NUTTALLI.

Saxidomus Nuttalli, CONR. Jour. Acad. Phila. VII, p. 249, pl. 19, fig. 13, 1837.

Venerupis gigantea, DESH. Rev. Zool. p. 359, 1839.—IDEM, Mag. de Zool.; pl. 43, (fossil?) 1841.—MIDDEN. Beit. III, p. 52, pl. xviii, f. 1–3.

Venus maxima, PHILIPPI, Abbild. II, t. 6, f. 1. 1846. Sowb. Thes., 46, f. 127.

Saxidomus gigantea, and *S. Nuttalli*, CARP. Rep. p. 299.

Hab.—Shoalwater bay and Puget Sound, Dr. Cooper; Bodega, California, Dr. Trask; Sitka, Middendorff; Kamschatka, Pot. & Mich., (Middendorff.)

"This, which somewhat resembles the *quahog* of the Atlantic coast, and is called by that name, is, however, much superior to it as food. It is found in the south part of Shoalwater bay *only*, and near the mouth of the Copalux. I have found it, also, common in Puget Sound. Its station is in somewhat hard sand, near low-water mark."—C.

There is also a variety of this shell found fossil in coast banks elevated ten feet above the sea level, which is very correctly represented in Deshayes' plate. The circumstance mentioned by Deshayes, of the encroachment of the ligament, destroying the teeth, is frequently observable, even in young shells. This species varies much in different localities, but chiefly in the exterior marking of the shell, the disk being sometimes brown, with rough concentric striæ, as described by Conrad; others, from Oregon, are much smoother, without regular striæ. But the most aberrant appearance is found in another variety that occurs fossil at Shoalwater bay, where it was collected by Dr. Cooper. This is well figured in Middendorff's work, as above cited, and less distinctly appears in Deshayes' figure. The specimen described by the latter (from California) appears to be fossil, as he suspected. Middendorff gives no such intimation regarding his.

A specimen from California measures 4.8 inches in breadth. A somewhat large, and very perfect specimen is most accurately figured and described by Anton, in the work of Philippi, above quoted, whence it is also copied by Sowerby.

VENUS CAMELLIFERA.

Venus camellifera, CONR. Jour. Acad. Phila. VII, p. 251, pl. 19, f. 19. 1837.

Venerupis cordieri, var. β DESH. Cat. Varn. p. 191, No. 1.

Petricola cordieri, DESH. Rev. Cuv. p. 358. 1839.

Rupellaria camellifera, CARP. Rep. p. 299.

Hab.—San Diego; Mr. Cassidy.

Several entire specimens, but none smooth, and one with perfect camellæ, were sent by Mr. Cassidy to the Smithsonian Institution.

Family MACTRIDÆ.

LUTRARIA MAXIMA.

Lutraria maxima, MIDDENDORFF, Beit. III, p. 66, pl. xix, f. 1–4. 1849.

Lutraria capax, GOULD, Proceed. Bost. Soc. N. H. III, p. 217. 1850.

Lutraria maxima, IDEM, U. S. Expl. Exped. Moll. and Shells, p. 395. Carp. Rep. p. 300.

Hab.—Shoalwater bay, Dr. Cooper; San Francisco, California, Dr. Trask; Sitka, Middendorff, (from Wosnessenskii.)

"This great *clam* (as all these edible bivalves are indiscriminately called) is found in Shoalwater bay, within a rather limited area near the mouth and along the larger channels. It is buried near two feet deep in hard sand, near low water mark, its long siphon reaching the surface and showing where it can be found. It also abounds in many parts of Puget Sound, up to near Olympia. It is excellent as food, and has always been one of the chief articles of winter stores to the Indians, who preserve the hard parts by stringing and then smoking them in their lodges. It attains to $7\frac{5}{8}$ inches in breadth, and is very capacious.

Portions of the clay and sandstone cliffs surrounding the bay are perforated by the burrows of this animal at a height of ten feet above the present high water. All the other mollusca inhabiting the bay now are also found in these fossil beds; and two which are not found now were then common. There is no tradition among the Indians of the time of their elevation, and the ancient trees standing on the surface show no signs of the irregular upheavings which raised the former levels of low water, by successive stages, to a height now nearly one hundred feet above the sea."—C.

Family TELLINIDÆ.

TELLINA NASUTA.

Tellina nasuta, CONR. Journ. Acad. Phila. VII, p. 258.—MIDD. Beitrage, III, p. 61, 62.—IDEM, Reise, p. 256, pl. xxiii, f. 6–11.—SOWB. Thes. VI, p. 314, pl. 64, f. 224.—CARP. Rep. p. 302.

Hab.—Shoalwater bay, Dr. Cooper; Puget Sound, Dr. Suckley; San Francisco, Dr. Trask.

Rather a common species, whose range extends from Lower California to the Arctic regions, having been found by Eschscholtz at Sitka, and by Middendorff in the Sea of Okhotsk.

TELLINA EDENTULA.

Tellina edentula, BROD. & SOWB. Zool. Journ. IV, p. 363.—GRAY, Zool. of Beechey's Voy. p. 154, pl. 41, f. 5, and pl. 44, f. 7.—CARP. Rep. p. 301.

Hab.—Puget Sound, G. Gibbs; Oregon, Nuttall.

Several specimens of this large species were sent to the Smithsonian Institution by Mr. Gibbs. It was also found at the mouth of Columbia river by Mr. Nuttall. In old shells the teeth nearly disappear, but in younger examples they are long and strong, so that the name is not strictly applicable.

TELLINA BODEGENSIS.

Tellina bodegensis, HINDS, Zool. Voy. Sulph. p. 67, pl. 21, f. 2.—CARP. Rep. p. 302.

Hab.—Shoalwater bay, Dr. Cooper; mouth of the Umpqua river, Dr. Vollum, U. S. A.

This is much more rare than *T. nasuta* found in the same stations.

SANGUINOLARIA CALIFORNIANA.

Sanguinolaria californiana, Conr. Jour. Acad. Phila. VII, p. 230, pl. 17, f. 6, Carp. Rep. p. 301.

Hab.—Mouth of Columbia river; Dr. Cooper.

Rather common at the mouth of the Columbia and other rivers, and high up salt water creeks.—C.

Family SOLENIDÆ.

SOLEN SICARIUS.

Solen sicarius, Gould, Proceed. Bost. Soc. N. H. III, p. 214.—Idem, U. S. Expl. Exp. p. 387, atlas, fig. 501.—Carpent. Rep. p. 301.

Hab.—Puget Sound; Dr. Cooper.

A single dead shell found on the shore at the town of Steilacoom. It is probably abundant on the mud flats near the mouth of the Nisqually river.—C.

MACHAERA NUTTALLI.

Solen maximus, Wood, (nec Chemn.) Gen. Con. pl. 31, f. 3.—Idem, Ind. Test. pl. 3, f. 16.

Solecurtus nuttallii, Conr. Journ. Acad. Phila. VII. p. 234, pl. 17, f. 9.

Machaera costata, Midd. (nec Say) Beit. III, p. 78, pl. XXI, figs. 4–10.—Idem, Reise.

Machaera maxima, Gould, U. S. Expl. Exped.; Jay's Cat. No. 239.

Machaera nuttalli, Carpenter, Rep. p. 301.

Hab.—Seacoast of Washington Territory; Dr. Cooper.

This shell inhabits the sand immediately upon the sea-beach, burrowing about the edge of the usual low tide, where it can be dug up with little trouble, as it is only a few inches from the surface. It is considered, and justly, the best of the many fine eatable mollusca of the coast, excepting always the oyster. Severe storms wash up many of these shells, but they soon crack under the sun's rays, and the beautiful epidermis falls off.

This is the only truly marine mollusc I have been able to find on the sandy sea-beach near the Columbia river. It extends northward as far as the beach is sandy, but is not found, I believe, anywhere within the Straits of De Fuca.—C.

Family MYACIDÆ.

MYA CANCELLATA.

Mya cancellata, Conr. Journ. Acad. Phila. VII. p. 235, pl. 18, f. 2.—Jay Cat. No. 265.

Platyodon cancellatum, Conr. Journ. Acad. Phila. 1849.—Carp. Rep. p. 300.

Hab.—San Luis Obispo; Dr. Antisell.

Dead valves only were found.

SPHOENIA CALIFORNICA.

Sphoenia californica, Conr. Journ. Acad. Phil. VII, p. 234, pl. 17, f. 11.—Carp. Rep. p. 300.

Cryptomya californica, Conr. Journ. Acad. Phila. 1849, p. 208.

Hab.—San Francisco; Dr. Trask.

Family ANATINIDÆ.

MYTILIMERIA NUTTALLI.

Mytilimeria nuttalli, CONR. Journ. Acad. Phila. VII, p. 247. pl. 19, f. 5.—CARP. Rep. p. 301.

Hab.—San Diego; Lieutenant W. P. Trowbridge.

A small group of this curious shell, nestling in a white friable arenaceous substance, was received by the Smithsonian Institution through the kindness of Lieutenant Trowbridge.

Family PHOLADIDAE.

PHOLAS PENITA.

Pholas penita, CONR. Jour. Acad. Phila. VII, p. 237, pl. 18, f. 7, 1837.

Pholus concamerata, DESHAYES, Rev. Zool. p. 234, 1839.—IDEM, Mag. de Zool. pl. 17, 1840.

Parapholas penita, CONR. Jour. Acad. Phila. 1849, p. 214, CARP. Rep. p. 290.

Hab.—Shoalwater bay, Dr. Cooper; Straits of Fuca, Dr. Suckley; Oregon, mouth of Umpqua river, Dr. Vollum, U. S. A.

"A specimen was obtained from a piece of worn rock which drifted into the bay attached to the roots of *macrocystis*, the giant seaweed."—C.

No. 7.

REPORT ON THE CRUSTACEA COLLECTED ON THE SURVEY.

By J. G. COOPER, M. D.

CLASS CRUSTACEA.

Order DECAPODA BRACHYURA.—Short-tailed Crustaceans.

CANCER MAGISTER, Dana.

The Great Western Crab.

Cancer magister, Dana, U. S. Expl. Exped., Crust., 151, pl. vii, fig. 1.—Stimpson, Proc. Cal. Acad. Nat. Sc. I, 88.—Ibid. Journ. Bost. Soc. Nat. Hist. VI, 1857, (extracted, p. 18.)
Cancer inorratus, Randall, Proc. Cal. Acad. Nat. Sc. (non Say.)

Sp. Ch.—The largest crab of our Pacific coast; antero-lateral margin ten-toothed; teeth anteriorly but little prominent. Third article of outer maxillipeds somewhat granulated, with the exterior apex broadly truncated. Feet of second pair longest, as long as the width of carapax. Length when full grown, nearly five inches; width nearly nine. Color, light reddish brown above, darkest anteriorly, often light orange below; inner sides of anterior feet and hands, crimson.

This large crab is very abundant at Shoalwater bay during spring and summer. They can be taken by hand in large numbers at low tide on the sand flats or in shallow pools. Their spawn is deposited in July, after which they leave the bays for deep water. As food they are superior to the common crab of the Atlantic coast, *(Lupa dicantha.)*

PINNIXA FABA, Stimpson.

The Parasitic Lutraria Crab.

Pinnothera faba, Dana, U. S. Expl. Exped. Crust. I, 381, pl. xxiv, fig. 4.
Pinnixa faba, Stimp. Journ. Bost. Soc. Nat. Hist. VI, (extracted, p. 30.)

Sp. Ch.—The male resembles *P. cylindrica*, (*Pinnothera cylindrica*, Say,) and is much smaller than the female, while the carapax is shorter and broader, its length being in the proportion of 1 to 1. 8. Length, 0. 36 inch; breadth, 0. 65. Female, length, 0. 69 inch; breadth, 1. 05. Hands very large, finger more curved in the male than the female. Color, (living,) grayish white.

This little crab is found within the large shell of the *Lutraria*, one of the "Clams" abundant at Shoalwater bay, but I never met with more than half a dozen in hundreds of shells. It probably lives on food brought into the shell by the current of water, and does not at all incommode its hospitable host. I never met with it in other shells.

Order DECAPODA MACROURA.—Long-tailed Crustaceans.

CALLIANASSA CALIFORNIENSIS, Dana.

Small Land Crawfish.

Callianassa Californiensis, Dana, Proc. Acad. Nat. Sc. Phil., 1854, VII, p. 175.
Callianassa occidentalis, St. Proc. Cal. Acad. Nat. Sc. I, 1855, 88.

Sp. Ch.—Eye peduncles sub-triangular, closely approximated at their bases, but diverging at their pointed tips. Length of external antennæ two-thirds that of the body. Larger anterior foot smooth and glossy on the sides, ciliate along the edges. Hand broadest at the base, but little longer than the carpus and much narrower. Color a delicate orange; anterior feet rose-colored. Length, three inches.

This animal lives in the hard sand about the mouth of Shoalwater bay, buried at the depth of about a foot, and leaving a small hole at the surface, sometimes visible at low tide. It may readily be known by its soft body and general form, resembling that of the crawfish. Two other species, one of them often five inches long, are found in similar situations on the coast.

ASTACUS TROWBRIDGII, Stimpson.

Coast Crawfish.

Astacus trowbridgii, St. Proc. Bost. Soc. Nat. Hist. VI, p. 87.—Ibid. Journ. Bost. Soc. Nat. Hist. VI, (extracted, p. 83,) pl. xxi, fig. 4.

Sp. Ch.—Thoracic spines prominent, rostrum short, broad, with smooth nearly parallel sides; terminal tooth of moderate length; antero-lateral teeth sufficiently prominent. Hands large, robust, equal in size; surface rough; fingers spinulose. A prominent spine near the extremity of the brachium. Color, when fresh, olive above; pale, tinted with red below. Length, four to five inches.

Numerous species of crawfish are found in the Territory, nearly all so closely allied as to be distinguished only on careful comparison. One found in the Columbia is said to grow eight inches long.

This species is found in the streams running into Shoalwater bay, and also at the mouth of the Columbia. It sometimes gets into the brackish water of the bay, but probably returns to the fresh streams as soon as possible. All the crawfish are good eating, but small usually, and not much sought after.

CRANGON FRANCISCORUM, Stimpson.

San Francisco Shrimp.

Crangon franciscorum, St. Proc. Cal. Acad. Nat. Sc. I, 1856, p. 89.—Ibid. Journ. Bost. Soc. Nat. Hist. VI, (extracted, p. 55,) plate xxii, fig. 5, (hand.)

Sp. Ch.—Very slender and depressed; rostrum small, subtriangular, rounded in front; hand large, with an oblique palm, thumb-like process long and spiniform. Color, light and dark yellowish gray, mottled; eyes salmon red in life. Length, from one to three inches.

This is the only species of shrimp I found at Shoalwater bay, where it is very rare, since I got only three or four, and these only half the size it grows to further south. In San Francisco great numbers of this and a black-tailed species (*C. nigricauda*, St.) are sold as food in the markets. Those I found were caught in September.

Order ISOPODA, Equal-footed Crustaceans.

IDOTAEA WOSSNESSENSKII, Brandt.

Dark-green Idotaea.

Idotaea Wossnessenskio, Brandt, Sibirische Reise, Zool. I, p. 146.—Stimpson, Journ. Boston Soc. N. H. VI, (64.)
I. hirtipes, Dana, U. S. Expl. Exped. Crust. II, p. 704, pl. XLVI, fig. 6.
I. oregonensis, Dana, Proc. Acad. N. S. Phil. 1854, VII, p. 175.

A very common animal, about an inch in length, and of a dark green color, in form resembling the common "saw-bugs." Found on sea-weed among rocks, between high water and low tide marks, Shoalwater bay.

SPHAEROMA OREGONENSIS, Dana.

Oregon Water Pill-bug.

Sphaeroma oregonensis, Dana, U. S. Expl. Exped. Crust. II, 778; pl. LII. fig. 4. Ib. Proc. Acad. N. S. Philad., VII p. 177.—Stimpson, Journ. Bost. Soc. N. H. VI, (69.)

A common species found under stones at low-water mark in bays, &c. It looks very much like the pill-bug or saw-bug of the land, (*Oniscus*,) and like it rolls itself into a ball when disturbed.

Numerous other crustacea are found on the coast of the Territory, but none of them fell under my observation. For a complete enumeration of them, with synonymy and description of new species, the reader is referred to Stimpson's article in Journ. Bost. Acad., vol. VI.

LIST OF CRUSTACEA OBTAINED AT PUGET SOUND BY DR. SUCKLEY.

Descriptions of the species are contained in the Report on the Crustacea and Echinodermata of the Pacific shores of North America, by William Stimpson, extracted from the Proceedings of the Boston Society of Natural History.

Cancer magister, Dana.
Cancer gracilis, Dana.
Pseudograpsus oregonensis, Dana.
Paguristes turgidus, Stimpson.
Callianassa californiensis, Dana.
Callianassa longimana, Stimpson.
Astacus leniusculus, Dana.
Crangon franciscorum, Stimpson.
Pandalus danae, Stimpson. } Obtained by Captain Murden.
Idotaea resecata, Stimpson. }
Lygia dilatata, Stimpson.
Orchestia californiensis, Dana.

INDEX TO ZOOLOGICAL REPORT.

	Page.
Acanthias suckleyi	367
Accipiter cooperi	145
mexicanus	146
fuscus	146
Acipenser transmontanus	366
Acmæa	376
Acomus lactarius	360
Actinemys marmorata	292
Aegialitis vociferus	230
montanus	231
semipalmata	231
Aegiothus linaria	198
Agelaius phoeniceus	207
Aix sponsa	257
Albatross, Short-tailed	269
Alce americana	105, 133
Amblodon grunniens	355
Ambloplites æneus	350
Amia ocellicauda	365
occidentalis	366
Ammocœtes cibarius	368
Amnicola	374
Ampelis cedrorum	187
Anas boschas	253
Anchovy, Pacific	365
Ancylus	378
Anodonta	381
Anomia	378
Anser hyperboreus	249
gambelii	249
Anthus ludovicianus	176
Antilocapra americana	136
Antelope, Prong-horned	136
Antrostomus nuttallii	166
Aplocerus montanus	105, 136
Aplodontia leporina	82, 100, 124
Aquila chrysaetos	288
Arca	381
Archibuteo lagopus	148
ferrugineus	149
sancti johannis	288
Arctomys flaviventer	99, 124
Ardea herodias	228
Artedius notispilotus	353
Argyreus nubilus	361
Arvicola oregoni	86, 103
townsendii	86, 103, 129
Aspicottus bison	353
Astacus	388
Astur atricapillus	144
Athene hypugaea	157
cunicularia	157
Avoset, American	234
Auks	283
Badger, American	77, 94, 117
Banded Mudfish	355
Bascanion vetustus	301
Bascanion flaviventris	297
Bass, Black	350
Bassaris astuta	114
Batrachians, Tailed	305
Batrachians, Tailless	303
Bear, Black	78, 120
Bears, White	119
Grizzly	119
Yellow	119
Brown	119
Cinnamon	119
Beaver	82, 100, 126
Bernicla canadensis	250
leucopareia	250
hutchinsii	251
nigricans	252
Bighorn	137
Birds, Perching	164
Humming	164
Swimming	248
Bison	138
Bittern	228
Black Bear	78, 120
Black-bird, Swamp	207
Redwing	207
Brewer's	209
Black Cat	82, 114
Blasipus heermanni	275
Blue-bird, Western	173
Bonasa sabinii	224
Bos americanus	138
Botaurus lentiginosus	228
Brachyotus cassinii	155
Brachyramphus marmoratus	286
temminckii	287
Brant, Hutchins	287
White-necked	250
Black	252
Bubo virginianus	154
Buffalo	138
Bufo boreas	303
columbiensis	304
Bulla	378

	Page.
Bull-bat	166
Bull-snake, Oregon	300
Prairie	300
Bunting, bay-winged	200
Butcher-bird	188
Buteo cooperi	146
elegans	147
montanus	147
vulgaris	288
swainsonii	288
borealis	288
Buzzards	147
Cabree	136
Calidris arenaria	241
Callianassa	388
Cancer	387
Canis occidentalis	75, 90, 110
griseo albus	90, 110
nubilus	90, 111
latrans	90, 111
Cardium	382
Carp, Deer nosed	359
Carp, Oregon	363
Carpiodes damalis	359
Carpodacus californicus	196
Castor canadensis	82, 100, 126
Cat, Wild	74, 75, 90, 109
Red	74, 90, 109
Civet	114
Catfish, Blunt-tailed	359
Olive	359
Porous	356
Cattle	138
Cathartes atratus	288
aura	140
californicus	141
Catostomus sucklii	360
Cayote	111
Cebidichthys violaceus	353
Cedar bird	187
Celuta amœna	302
Centrocircus urophasianus	222
Cerorhina monocerata	284
suckleyi	284
Certhia americana	192
Cervus canadensis	106, 133
leucurus	106, 134
columbianus	136, 135
virginianus	134
macrotis	134
Ceryle alcyon	167
Chaetura vauxii	165
Char, Red	344
Charadrius virginicus	229
Chaulelasmus streperus	256
Cheonda cooperi	362
Chewink, Oregon	206
Chimaera colliaei	366
Chiropsis nebulosus	351
Chiton	376
Chondestes grammaca	200
Chroicocephalus philadelphia	276
Chrysodomus	370
Chrysomitris pinus	197
tristis	197
Chub, Vancouver	362
Circus hudsonicus	150
Cistothorus palustris	190
Civet Cat	114
Cock, Black Wood	161
Log	161
Cock of the Plains	222
Cod, Puget Sound	356
Colaptes mexicanus	163
Collyrio borealis	188
Columba fasciata	217
Columbella	373
Columbia Gopher	100, 126
Colymbus torquatus	278
pacificus	279
septentrinalis	279
Condylura	108
Contopus borealis	169
Coot	247
White winged	262
Sea	262
Cormorant, Double crested	267
Violet green	267
Corvus carnivorus	210
americanus	211
caurinus	211
Cottopsis asper	351
Cotyle serripennis	186
Cougar	74, 89, 108
Crab, Oregon	387
Parasitic	387
Crane, Sand hill	227
Brown	227
Great Blue	228
Crangon	388
Crawfish, Oregon	388
Soft-shelled	388
Creeper, American	192
Crossbill, Red	198
Crotalus lucifer	295
confluentus	295
Crotaphytus wislizenii	294
Crow, Common	211
Fish	211
Clarke's	212
Crowned Wrens	174
Crustaceans, Short-tailed	387
Long-tailed	388
Equal-footed	389
Curlew, Long-billed	245
Curvirostra americana	198
Cyanospiza amœna	205
Cyanura stelleri	214
Cyclas	382
Cygnus americanus	248

	Page.
Cygnus buccinator	248
Cynomys ludovicianus	99, 123
Dace, Nebraska	361
Dafila acuta	253
Damalichthys vacca	356
Deer, Black-tailed	88, 106, 135
White-tailed	106, 134
Deer-nosed carp	359
Dendroica occidentalis	178
townsendii	179
nigrescens	180
coronata	180
audubonii	181
aestiva	181
Diadophis pulchellus	302
Diomedea brachyura	269
Dipodomys phillippii	100, 127
Dipper, American	175
Diver, Great Northern	278
Pacific	279
Red-throated	279
Divers	278
Dog-fish, Western	367
Dogs	112
Dove, Carolina	218
Duck, Summer	257
Wood	257
Big Black-head	258
Scaup	258
Broad-bill	258
Canvas-back	258
Golden-eye	259
Whistle-wing	259
Butter-ball	259
Dipper	259
Buffle-head	259
Harlequin	260
South-southerly	261
Old wife	261
Old squaw	261
Long-tail	261
Velvet	262
Surf	262
Scoter	263
Fish	263
Pintail	253
Sprigtail	253
Shoveller	255
Spoon-bill	255
Gadwall	256
Gray	256
Baldpate	256
Widgeon	256
Ducks, True	253
Eagle, Bald	151
White-headed	151
Eagles	151
Ectopistes migratoria	218
Elanus leucurus	149
Elgaria principis	292
Elgaria grandis	293
Spotted	292
Banded	293
Elk	88, 105, 133
Embiotoca perspicabilis	357
Empidonax pusillus	170
Emys marmoratus	293
Engraulis mordax	365
Enhydra marina	76, 93, 115
Eremophila cornuta	195
Eulachon	349
Eutainia atrata	296
cooperi	296
pickeringii	296
leptocephala	297
vagrans	297
concinna	298
haydenii	298
faireyi	299
radix	299
Falco aesalon	288
nigriceps	142
columbarius	142
polyagrus	143
sparverius	143
Falcons, True	142
Felis concolor	74, 88, 108
Finch, Grass	200
Lark	200
Lazuli	205
Pine	197
Finches, Wood	196
Fishes, Report on	307
Fissurella	375
Flatfish, Rough	357
Flicker, Red Shafted	163
Fiber zibethicus	87, 103, 130
Fishes	76, 92, 114
Fly catcher, Arkansaw	168
Olive-sided	169
Least	170
Townsend's	187
Green Black-cap	182
Warbling	188
Blue-headed	189
Four-legged Fish	306
Fox, Raccoon	114
Gray	91, 113
Kit	113
Silver	91, 113
Black	91, 113
Cross	91, 113
Western	76, 112
Prairie	91
Frog, Salmon	304
Spotted	304
Oregon wood	304
Gallinago wilsonii	237
Gambetta melanoleuca	242
Garter snake	278

	Page.
Gasterosteus serratus	354
pugetti	354
Geothlypis trichas	177
macgillivrayi	177
Glaucidium gnoma	158
Goat, Mountain	106, 136
Goatsuckers	166
Gobio gelidus	361
Godwit, Marbled	245
Goosander	263
Goose, Snow	249
White-fronted	249
Laughing	249
Canada	250
Hutchins'	251
Gopher, Columbia	100
Goshawk	144
Graculus dilophus	267
violaceus	267
Grebes, Crested	280
Western	281
Horned	281
California	282
Pied-bill	283
Green-head	253
Greenlets	188
Grosbeak, Evening	196
Black-headed	206
Ground puppy	306
Ground Robin, Oregon	206
Grouse, Dusky	219
Blue	219
Pine	219
Franklin's	221
Tyee	221
Sharptailed	223
Oregon	224
Grus canadensis	227
Guillemot, Horned-bill	284
Western	284
Guiraca melanocephala	206
Gull, California	273
Ring-billed	273
Suckley's	274
White-headed	275
Bonapartes	276
Glaucous-winged	270
Western	271
Gunnellus ornatus	355
Hæmatopus niger	233
Haliætus leucocephalus	151
Haliotis	375
Hare, Western Red	87, 103, 130
Prairie	104, 131
Townsend's	104, 131
Jackass	104, 131
Texas	104, 131
Black-tailed	104, 131
California	87, 104, 132
Sage	105, 132

	Page.
Harrier	150
Hawk, Pigeon	142
Duck	142
Lanier	143
Sparrow	143
White-tailed	149
Black-shouldered	149
Marsh	150
Cooper's	145
Blue-backed	146
Sharp-shinned	146
Fish	153
Squirrel	149
California	148
Red-tail	147
Red-bellied	147
Rough-legged	148
Hawks, Slender	144
Helix	376
Helminthopaga celata	178
Hens, Marsh	246
Mud	247
Heron, Great Blue	228
Night	229
Herring, Puget Sound	363
Missouri	364
Hesperiphona vespertina	196
Hesperomys gambelii	83, 102, 127
austerus	83, 102, 127
sonoriensis	102
boylii	84
californicus	84
Heteroscelus brevipes	243
Hirundo bicolor	185
thalassina	185
rufa	184
lunifrons	184
Holconotus rhodoterus	358
Horn Fish	351
Horse	138
Humming Bird, Red-back	164
Hybognathus argyritis	361
Hydrobata mexicana	175
Hyla regilla	304
Hylatomus pileatus	161
Hyodon tergisus	364
Ichthyomyzon castaneus	368
Icterus bullockii	209
Idotœa, Dark Green	389
Jaculus hudsonius	83, 101, 127
Jay, Steller's	214
Canada	216
Jumping Mouse	83, 101, 127
Junco oregonus	202
Kangaroo Rat	127
Killy, Steilacoom	362
Spotted	362
King Bird	167
Kingfisher, Belted	167
Kittiwake, North Pacific	277

	Page.
Kittiwake, Turner's	277
Lamprey, Chestnut	368
Launce, Pacific Sand	368
Lark, Horned	196
Western Meadow	208
Sky	195
Shore	195
Larus californicus	273
delawarensis	273
suckleyi	274
glaucescens	270
occidentalis	271
Leptocottus armatus	352
Lepus washingtonii	87, 103, 130
campestris	104, 131
callotis	104, 131
californicus	104, 132
artemisia	105, 132
trowbridgii	87
Limax	377
Limosa fedoa	245
Lion, California	74, 88, 108
Lithodomus	380
Little Striped Skunk	77
Littorina	374
Lizard, Slender	294
Western Fence	293
Loons	278
Lophodytes cucullatus	265
Lophortys californica	225
Lucina	382
Lumpenus anguillaris	356
Eel-shaped	356
Lutra californica	76, 115
Lutraria	384
Lygia	389
Lymnæa	378
Lynx fasciatus	74, 90, 109
rufa	75
Machæra	385
Macroramphus griseus	238
Magpie	213
Mallard	253
Mareca americana	256
Marmot, Yellow-footed	124
Martin, Purple	186
Bee	167
Masticophis tæniatus	302
Melania	374
Melanerpes torquatus	161
Meletta cerulea	363
Melospiza rufina	204
Mephitis bicolor	76
mephitica	94
occidentalis	76, 94, 116
Merganser, Hooded	265
Red-breasted	264
Mink	93, 115
Minnow, Silvery	361
Modiola	380
Mole, Star-nosed	108
Western	73, 89, 107
Monkey-fish, violet	355
Monoceros	372
Moose	105, 133
Mormon cirrhata	283
Morrhua	356
Mountain sheep	137
Mouse, Jumping	101, 127
Gambel's	83, 102, 127
White-bellied	83, 127
Ground	86, 103, 129
Meadow	129
Muskrat	369
Mus decumanus	101
Muskrat	87, 103, 130
Mustela americana	76, 92
pennanti	76, 92, 114
Mya	385
Myiadestes townsendii	187
Mylocheilus lateralis	359
Mytilimeria	386
Mytilus	380
Myiodioctes pusillus	182
Nacella	376
Nassa	371
Natica	373
Nautichthys oculo-fasciatus	354
Neosorex navigator	73
Neotoma cinerea	103
fuscipes	84
occidentalis	85, 102, 128
Nettion carolinensis	254
Night hawk	166
Numenius, longirostris	245
Nuthatch, Red-bellied	192
Slender-billed	193
California	193
Nyctale acadica	156
Nyctea passerinoides	288
nivea	288
Nyctiardea gardeni	229
Okow	351
Oligocottus maculosus	352
Orchestia	389
Oreortyx pictus	225
Oriole, Bullock's	209
Ostrea	378
Osprey, American	153
Otter, Sea	76, 115
Land	115
Californian	76, 115
Otus vulgaris	288
brachyotus	288
wilsonianus	155
Ouzel, Water	175
Ovis montana	137
Owls, Great Horned	154
Mottled	155
Screech	155

	Page.
Owl, Long-eared	155
Short-eared	155
Great Gray	156
Saw-whet	156
Burrowing	157
Pigmy	158
Oystercatcher, Bachman's	233
Pandalus	389
Pandion carolinensis	153
Panther, American	74, 81, 108
Paguristes	389
Partridge, Plumed	225
Parus occidentalis	194
montanus	194
rufescens	194
Passerculus sandwichensis	199
alaudinus	199
Passerella townsendii	204
Pecten	378
Pediocaetes phasianellus	223
Pelicanus erythrorhynchus	265
fuscus	266
Pelican, White	265
Rough-billed	266
Gray or Brown	266
Perch, Buffalo	355
Grunting	355
White	355
Sapphire	357
Silvery	358
Golden-barred	358
Perisoreus canadensis	216
Perognathus fasciatus	101
monticola	101
flavus	101
Pewee, Little	170
Phalarope, Northern	236
Red	236
Phalaropus hyperboreus	236
fulicarius	236
Phoca	78
Pholas	386
Physa	378
Pica hudsonica	213
Picus harrisii	159
gairdneri	159
albolarvatus	160
Pigeon, Band-tailed	217
Wild	218
Passenger	218
Carolina	218
Pike, Wall-eyed	351
Pike perch	351
Pillbug, Oregon Water	389
Pimelodus ailurus	359
olivaceus	359
Pimephales fasciatus	360
Pinnixa faba	387
Pine Finch	197

	Page.
Pipe fish, Pacific	365
Pipilo oregonus	206
Pituophis wilkesii	300
sayi	300
Planorbis	378
Platichthys rugosus	357
Plover, Golden	229
Rocky mountain	231
Kill-deer	230
Ring	231
Semi-palmated	231
Swiss	232
Black-bellied	232
Podiceps californicus	282
cristatus	280
cooperi	280
occidentalis	281
cornutus	281
Podilymbus podiceps	283
Pomotis luna	350
Poocetes gramineus	200
Porichthys notatus	356
Poule d'Eau	247
Prairie Dog	99, 123
Procyon hernandezii	78, 94, 118
Progne purpurea	186
Psaltriparus minimus	195
Pseudograpsus	389
Pteromys oregonensis	80, 122
Ptychocheilus oregonensis	363
Puffin, Tufted	283
Purple Finch, Western	196
Purpura	371
Putorius richardsonii	93, 114
longicauda	93, 114
vison	93, 115
pusillus	92
cicognanii	92
Pyranga ludoviciana	182
Quail, Mountain	225
California	225
Querquedula cyanoptera	254
Racer Green	301
Rabbit, Sage	105
Raccoon-Fox	114
Raccoon, Blackfooted	78, 94, 118
Raja cooperi	367
Rail, King	246
Virginia	247
Rallus elegans	246
virginianus	247
Rana pretiosa	304
halecina	304
Rat, Rocky Mountain	103
Brown	101
Norway	101
Bushy tailed	85, 102, 128
Hairy tailed	85, 102, 128
Pouched	100, 126

	Page.
Rat, Kangaroo	127
Rattlesnake, Western	295
Prairie	295
Raven, American	210
Recurvirostra americana	234
Red-Poll, Lesser	198
Regina kirtlandii	299
grahamii	299
Regulus calendula	174
satrapa	174
Reptiles	292
Soft skinned	303
Richardsonius balteatus	362
lateralis	362
Rissa septentrionalis	277
Ring snake, Western	302
Robin, Common	172
Painted	172
Rock "Cod"	354
Sage cock	222
Salamander, Warty	305
Salar	349
Salmonidæ, Report on	307
Salmo gairdneri	331
gibbsii	332
confluentus	334
scouleri	335
proteus	339
canis	341
spectabilis	342
clarkii	344
masoni	345
stellatus	346
(Salar) lewisii	349
quinnat	321
paucidens	325
argyreus	326
tsuppitch	327
truncatus	327
Salmon, Common	321
Weak-toothed	325
White	327
Silvery	327
-trout	327
Short-tailed	327
Square-tailed	327
Gairdner's	331
Hooked-nosed	335
Fall	335
Hump-backed	339
Dog	341
Spotted	341
Salmon trout, Black spotted	332
Red spotted	342
Sanderling	241
Sandpiper, Solitary	242
Spotted	244
Buff-breasted	244
Red-backed	239
Least	240

	Page.
Sanguinolaria	385
Saxidomus	383
Scalops townsendii	73, 89, 107
Sceloporus graciosus	294
occidentalis	293
Sciurus fossor	95, 121
richardsonii	79, 96, 121
douglassi	79, 97, 121
Scolecophagus cyanocephalus	209
Scops asio	155
Scoter	263
Scotophis vulpinus	299
Scratching birds	217
Sculpin, Prickly skinned	351
Slender	352
Buffalo	353
Ayres'	353
Rough	353
Bar-eyed	354
Scurria	376
Seal	78
Sea otter	115
Sebastes melanops	354
Selasphorus rufus	164
Sewellel	82, 100, 124
Sheepshead, Lake	355
Sheldrakes	263
Shell-fish	369
Showt'l	100, 124
Shrews	73, 89
Shrike, Great Northern	188
Shrimp, Californian	388
Sialia mexicana	173
Sitta canadensis	192
aculeata	193
pygmaea	193
Siredon lichenoides	306
melanosticta	306
Skate, Northwestern	367
Skunk, Western	94, 116
Californian	76, 94, 116
Little Striped	77
Snake, Ground	302
Fox	299
Worm	302
Brown Wood	303
Sparrow, Savannah, Large	199
Gray	199
White-crowned	201
Golden-crowned	201
Tree	203
Chipping	203
Western Song	204
Townsend's Fox	204
Spizella monticola	203
socialis	203
Snipe, Wilson's	237
English	237
Gray	238
Red-breasted	238
Jack	239

	Page.
Snipe, Long-legged	241
Stone	242
Snow-bird, Oregon	202
Solen	385
Sora	247
Sorex vagrans	73
trowbridgii	89
suckleyi	89
Sparrows, Painted	205
Field	199
Spatula clypeata	255
Spermophilus beecheyi	81, 122
douglassii	98, 122
lateralis	82
13-lineatus	98
Sphaeroma	389
Sphoenia	285
Squirrel, Say's striped	82
Western Gray	95, 121
Richardson's	79, 96, 121
Oregon Red	79, 97, 121
Pine	97, 121
Oregon Flying	80, 122
Striped	80, 97, 122
Ground	81, 98, 122
Squatarola helvetica	232
Stake-driver	228
Stickle back, Serrated	354
Puget Sound	354
Stizostedion boreus	351
Strepsilas interpres	233
melanocephalus	234
Striped Snake	297
Strix pratincola	288
Sturnella neglecta	208
Sturgeon, Columbian	366
Succinea	377
Sucker, Nebraska	360
Milk River	360
Sunfish, Black	350
Northern	350
Moon	350
Swallow, Barn	184
White-bellied	185
Violet-green	185
Rough-winged	186
Cliff	184
Swan, American	248
Trumpeter	248
Swift, Oregon	165
Symphemia semipalmata	241
Syngnathus arundinaceus	365
Syrnium cinereum	156
Tamias townsendii	80, 97, 122
quadrivittatus	97, 122
Tanager, Louisiana	182
Tapaya douglasii	294
Taricha torosa	305
Tattler, Tell-tale	242
Wandering	243

	Page.
Taxidea Americana	77, 94, 117
Teal, Green-winged	254
South American	254
Cinnamon	254
Red-breasted	254
Tellina	384
Tetrao obscurus	219
franklinii	221
Thaleichthys pacificus	349
Thistle bird	197
Thomomys douglasii	100, 126
Thriothorus bewickii	189
Thrush, Western	171
Varied	172
Titlark, American	176
Titmouse, Western	194
Chestnut-backed	194
Least	195
Mountain	194
Toad, Oregon Horned	294
Northern	303
Columbia	304
Toadfish	353
Towhee Bunting	207
Tringa alpina	239
maculata	239
wilsonii	240
Tringoides macularius	244
Triton	369
Trochus	375
Troglodytes parkmanni	191
hyemalis	191
Trout, Oregon Brook	346
Trupials	207
Tryngites rufescens	244
Turdus ustulatus	171
migratorius	172
naevius	172
Turkey buzzard	140
vulture	140
Turnstone	233
Black	234
Turritella	374
Turtle, Western Pond	292
Tyrannus carolinensis	167
verticalis	168
Uradela	305
Uria columba	285
Urotrichus gibbsii	89
Ursus americanus	78, 94, 120
horribilis	78, 119
Venus	382
Vireo gilvus	188
solitarius	189
Vulpes macrourus	76, 91, 112
decussatus	91, 113
cinereo-argentatus	91, 113
virginianus	91, 113
Vulture, Turkey	140
Californian	141

	Page.
Wading birds	227
Warbler, McGillivray's	177
Orange crowned	178
Western	178
Townsend's	179
Black-throated Gray	180
Yellow-rumped	180
Audubon's	181
Yellow	181
Water birds	227
Water ouzel	175
Water-snake, Prairie	299
Wax-wings	187
Weasel, Richardson's	93, 114
Long-tailed	93, 114
Least	92
Brown	92
Wenona plumbea	303
Whip-poor-will, Nuttall's	166
Whip-snake, California	302
Whiskey Jack	216
Widgeon, American	256
Willet	241
Wolf, Prairie	90, 111
Dusky	90, 111
Gray	75, 90, 110
Woodchuck, Western	124
Woodpecker, Harris'	159
Gairdner's	159
White-headed	160
Red-breasted	160
Lewis'	161
Wren, Ruby-crowned	174
Golden crested	174
Bewick's	189
Long-billed	190
Marsh	190
Parkmann's	191
Winter	191
Yellow bird	197
Yellow-legs, Greater	242
Yellow-throat, Maryland	177
Zaniolepis latipinnis	353
Zenaidura carolinensis	218
Zonotrichia gambelii	201
coronata	201